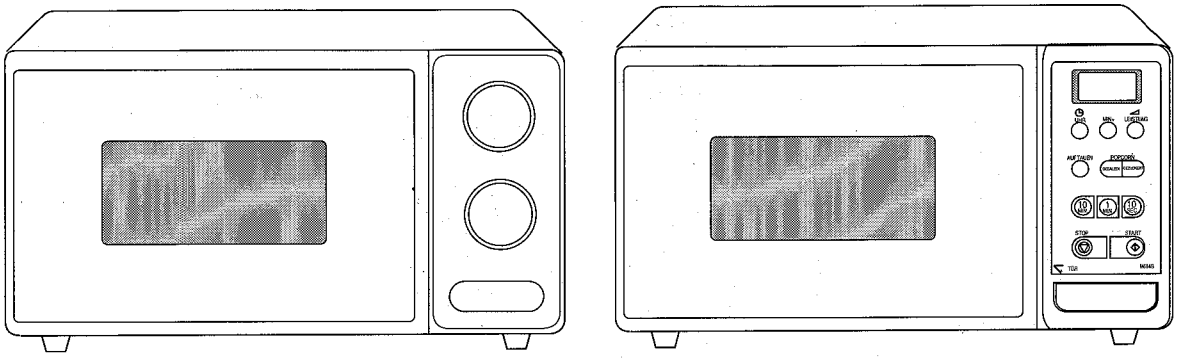
PART NO.: 74739-0615-00

SAMSUNG ELECTRONICS

S.E.G

SERVICE MANUAL
MODEL:M6138
17 Liter

MICROWAVE OVEN



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M6148

SPECIFICATIONS

Power Source	: 230V/50Hz
Power Consumption	: 1,300W(6.0A)
Output Power	: 800W
Operating Frequency	: 2,450MHz
Cooling Method	: Air Cooling
Outside Dimensions	: 472(W)x315(D)x262(H)mm
Oven Cavity Dimensions	: 288(W)x290(D)x212(H)mm
Shipping Weight	: Approx. 13kg

Specifications & designs subject to change without notice.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

1. Do not operate the oven or allow it to be operated with the door open.
2. Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and then make repairs as necessary:
   (A) Interlock operation.
   (B) Proper door closing.
   (C) Seal and sealing surfaces (arcing, wear, or other damages)
   (D) Damage to or loosening of hinges and latches.
   (E) Evidence of dropping or abuse.
3. Before turning on the microwave power for any service test or inspection inside the microwave generating compartments, check the magnetron, wave guide or transmissionline, and cavity for proper alignment, integrity and connections.
4. Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired or adjusted by procedures described in this manual before releasing oven to the owner.
5. A microwave leakage check should be performed on each oven prior to releasing to the owner.

Precautions

SAFETY CHECKS TO BE PERFORMED AFTER EACH SERVICE CALL

For absolute safety to the user and with interest in good service, the following safety checks should be performed upon the conclusion of any service of this appliance.

1. Check electric cord and plug. Remind owner of the importance of proper grounding.
2. Check power cord grounding lead to frame. Check for connection and continuity between the ground terminal of the plug and the oven frame.
3. Make physical check of door for build-up of soil on door seals or any possible damage. Check door fit and adjustment according to the instructions.
4. Check latch switch and door safety switch interlocks according to the instructions.
5. Check microwave emission prior to servicing the oven if it is operative.
6. Check the glass tray and guide roller for proper installation inside oven.

WARNING

1. Pacemaker wearers must consult their physician before attempting to service or repair a microwave oven. For additional advice on this subject, write to the manufacturer of your pacemaker.
2. The product should be serviced only by qualified personnel.
3. It is very important when servicing to avoid being exposed to excessive microwave radiation. All the repairs should be performed in accordance with the procedures described in this manual.
4. In the event of suspected microwave energy leakage in excess of 5mW/cm^2, please notify:
   CENTRAL SERVICE CENTER
5. Repair microwave oven free of charge to the owner for excessive microwave emission level.
6. Ascertain the cause of the excessive leakage and instruct the owner not to use the unit until the oven has been brought into compliance.

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NECESSARY TOOLS AND MEASURING INSTRUMENTS

1. Necessary tools

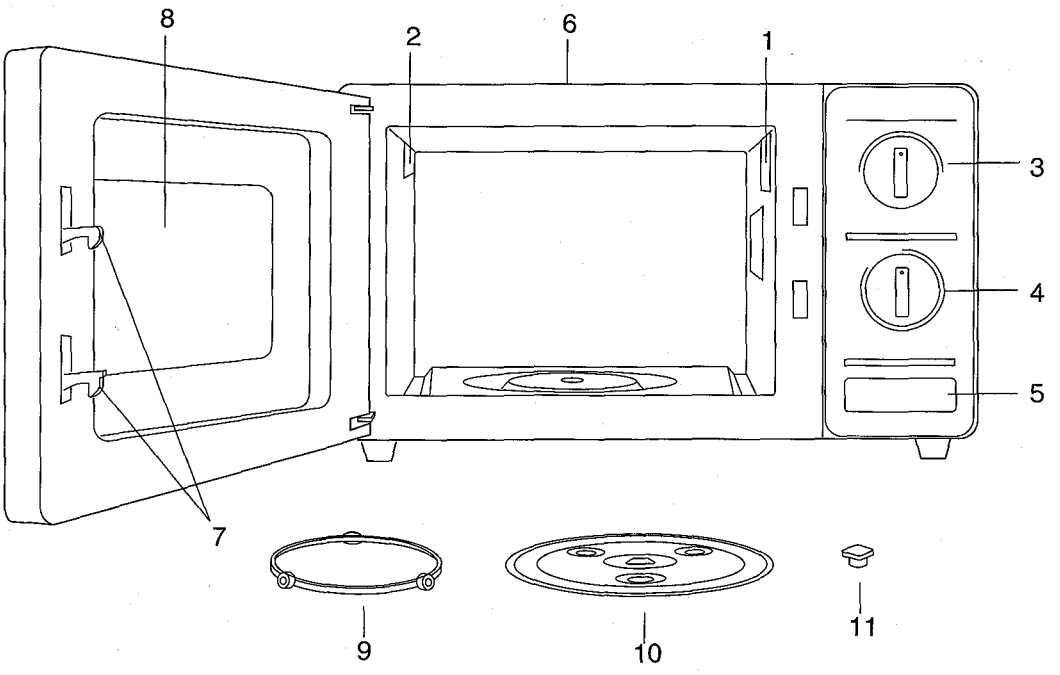
Tools normally used for TV servicing are sufficient. Standard tools are listed below.

* Diagonal pliers
* Phillips head screwdriver
* Slotted head screwdriver
* Solder
* Socket wrench (SIZE 8, 15mm)
* Long-nose pliers
* Nutdriver (SIZE 5.5, 7.8mm)
* Adjustable wrench
* Vinyl insulation tape
* Polishing cloth

2. Necessary measuring instruments

* Tester (Volt D.C/A.C - ohm meter)
* Ruler
* Microwave energy survey meter
* 600cc glass beaker
* Glass thermometer 100°C or 212°F with mercury column.
* Two 1-liter beakers

Features (M6138) & Operation Guide



1. Oven Lamp
2. Ventilation Openings
3. Variable Cooking Power Control Knob
4. Timer
5. Door Open Button
6. Model No. & Serial No. (Rear)
7. Door Latches & Safety Interlocks
8. Oven Door with see-through window
9. Ass'y Roller Ring
10. Oven Tray
11. Coupler

Operation Guide

Step 1. Plug in the appliance at the outlet.
Step 2. Open the door and place the food in the oven.
Step 3. Close door securely.
Step 4. Turn the Power Control Knob to desired power level : Low, Defrost, Medium, Med. High or High.
Step 5. Set the Timer for required time.
(Oven lamp turns on and microwave generation will start.)

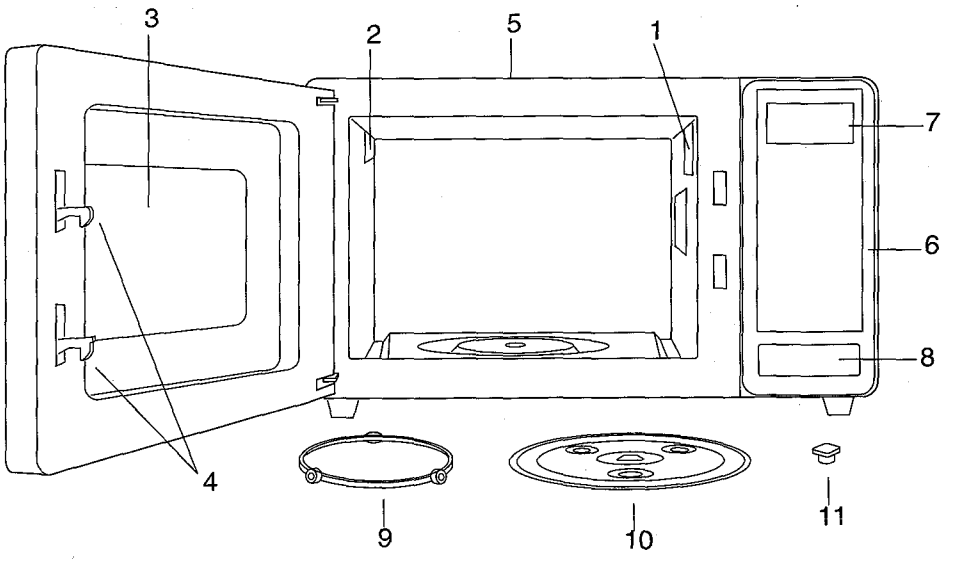
NOTE: When the cooking period is completed, a bell will ring and the oven will turn off automatically.
When the door is opened during operation, the oven will automatically turn off. The oven will not restart until the door is closed.

Variable Power Cooking Chart

The Variable Cooking Control allows you to select the amount of microwave energy and the rate of cooking/defrosting. There are continuous 9 power levels. (M6138)

Power Level	Output		
	%	M6138	M6148
HIGH	100%	600W	800W
MED. HIGH	70%	420W	560W
MEDIUM	50%	300W	400W
DEFROST	30%	180W	240W
LOW	15%	90W	----
	10%	----	80W

Features (M6148)



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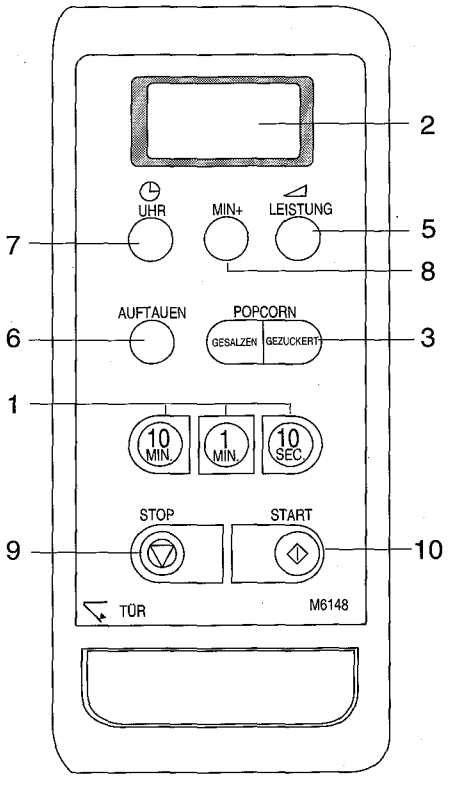
1. Oven Lamp
2. Ventilation Openings
3. Oven Door with see-through window
4. Door Latches & Safety Interlocks
5. Model No. & Serial No. (Rear)
6. Control Panel
7. Display
8. Door Open Button
9. Roller Ring
10. Oven Tray
11. Coupler

M6148



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1. 10MIN, 1MIN, 10SEC
2. Display
3. Popcorn Pad
5. Power Level pad
6. Defrost pad
7. Clock pad
8. MIN+ pad
9. Stop pad
10. Start pad

Bedienfeld (M6148)

Funktionsprüfung

Untersuchen Sie das Mikrowellengerät beim Auspacken auf eventuelle Transportschäden. Überprüfen Sie nach dem Auspacken bzw. bei Verdacht auf Störungen auch den einwandfreien Betrieb des Gerätes.

1. Schließen Sie den Netzstecker des Mikrowellengeräts an eine Steckdose an.
2. Setzen Sie den Drehteller korrekt in den Garraum ein.
3. Stellen Sie eine Tasse mit Wasser auf den Drehteller.
4. Schließen Sie die Gerätetür.
5. Drücken Sie die TIME COOK-Taste.
6. Stellen Sie eine Garzeit von vier bis fünf Minuten ein und drücken Sie die START-Taste (Garraumbeleuchtung und Mikrowelle schalten sich ein).
7. Nach vier bis fünf Minuten schaltet der Mikrowellenherd automatisch ab (die Garraumleuchte erlischt).
8. Bei einwandfreiem Betrieb des Mikrowellengerätes muß das Wasser kochen.

HINWEIS: Wenn eine niedrigere Leistungsstufe gewählt wurde (z. B. 10%), wird mehr Zeit benötigt, um das Wasser zum Kochen zu bringen.

Das technisch anspruchsvolle, aber einfach aufgebaute Bedienfeld ermöglicht die Programmierung des Mikrowellengerätes durch einfachen Tastendruck. Als Eingabebestätigung ertönt ein akustisches Signal.

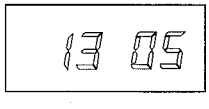
Wenn der Mikrowellenherd das erste Mal an das Netz angeschlossen wird, zeigt das Anzeigefeld alle Symbole. Zuerst muß nun die korrekte Uhrzeit eingestellt werden. Nach einer Unterbrechung der Stromzufuhr muß die Zeit erneut eingestellt werden. Während des Garvorganges speichert das Gerät die korrekte Zeit und zeigt sie nach dem Garen wieder an.

Einstellen der Uhrzeit

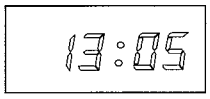
Beispiel: Die Zeit 13.05 Uhr soll eingestellt werden.

1. Drücken Sie die CLOCK-Taste.

2. Stellen Sie die korrekte Uhrzeit durch Drücken der HOUR- bzw. MIN-Taste ein. Die Zeit wird im 24-Stundenmodus angezeigt.



3. Starten Sie die Uhr durch Drücken der CLOCK-Taste.



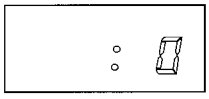
Die Uhrzeit wird nach dem ersten Einstellen ständig angezeigt. Bei Eingabe eines Garprogramms erlischt die Zeitanzeige und erscheint nach Beendigung des Programms wieder in der Anzeige.

Auftauen

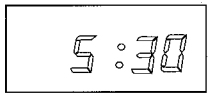
Die Auftaustufe ist eine besonders praktische Funktion des Mikrowellenherdes. Sie dient zum schnellen Auftauen tiefgefrorener Nahrungsmittel. Für das Auftauen wird die Leistung automatisch auf 30% reduziert.

Beispiel: Tiefgefrorene Nahrungsmittel sollen 5 Minuten und 30 Sekunden lang aufgetaut werden.

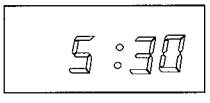
1. Legen Sie die aufzutauende Speise in den Mikrowellenherd und schließen Sie die Gerätetür.
2. Drücken Sie die DEFROST-Taste. Die Zeitanzeige erlischt.



3. Stellen Sie durch Drücken der Tasten 1MIN und 15SEC die gewünschte Auftauzeit ein.



4. Drücken Sie die START-Taste.



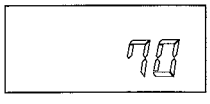
Die Zeit zählt während des Auftauens auf Null zurück. Nach Ablauf der Auftauzeit ertönen vier akustische Signale und auf dem Anzeigefeld wird wieder die Tageszeit angezeigt.

Garzeiten

Einstufiger Garvorgang

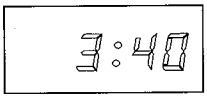
Beispiel: Eine Suppe soll in 3 Minuten und 40 Sekunden bei 70 % Leistung (Garstufe HOCH) erwärmt werden.

1. Drücken Sie die Taste TIME COOK/POWER LEVEL zweimal. Die Zeitanzeige erlischt.

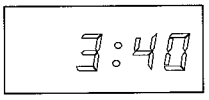


Bedienfeld (M6148)

2. Stellen Sie mit den Tasten 1MIN und 15SEC die gewünschte Garzeit ein.



3. Drücken Sie die START-Taste.



Die Zeit zählt nach dem Einschalten auf Null zurück. Die Anzeigen erlöschen nach Beendigung des Programms und die Tageszeit wird wieder angezeigt. Das Mikrowellengerät schaltet sich ab.

HINWEISE:

1. Bevor Sie die Garzeit einstellen, müssen Sie die gewünschte Leistungsstufe eingeben.
2. Sie können die Leistungsstufe durch Drücken der Taste TIME COOK/POWER LEVEL wählen.
3. Während des Garvorganges kann die Gerätetür mit dem Türöffner geöffnet werden. Dadurch wird der Garvorgang unterbrochen und Sie können den Garzustand der Speisen überprüfen. Soll das Garen fortgesetzt werden, schließen Sie die Gerätetür und drücken Sie die START-Taste. Das Gerät setzt den Garvorgang mit der verbliebenen Zeit fort.

TASTE	DRÜCKEN	ANZEIGE	LEISTUNG
TIME COOK/ POWER LEVEL	EINMAL	100	800 W
	ZWEIMAL	70	560 W
	DREIMAL	50	400 W
	VIERMAL	30	240 W
	FÜNFMAL	10	80 W

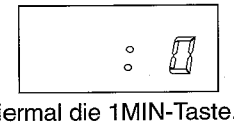
4. Wenn die Speisen vor der eingestellten Zeit gar sind, brechen Sie das Programm durch Drücken der CANCEL-Taste ab.

Mehrstufiger Garvorgang

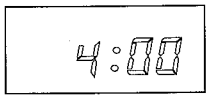
Mit diesem Mikrowellengerät können Sie bis zu zwei Garstufen programmieren, um zum Beispiel automatisch von der Auftaustufe auf eine Garstufe umzuschalten.

Beispiel: Ein tiefgefrorenes Gericht soll vier Minuten aufgetaut und dann fünf Minuten bei ,70 % Leistung gegart werden.

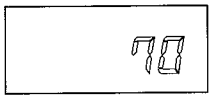
1. Drücken Sie die DEFROST-Taste.



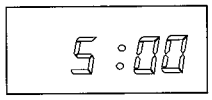
2. Drücken Sie viermal die 1MIN-Taste.



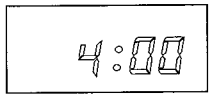
3. Drücken Sie zweimal die TIME COOK-Taste, um 70 % Leistung einzustellen.



4. Drücken Sie fünfmal die 1MIN-Taste.



5. Drücken Sie die START-Taste.

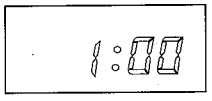


HINWEIS: Nach Ablauf der Auftauzeit wird das Gericht auf der zweiten Stufe gegart.

+MIN

Mit der +MIN-Taste können Sie die Garzeit um bis zu 99 Minuten verlängern, ohne die gesamte Programmierung nochmals wiederholen zu müssen.

Drücken Sie die +MIN-Taste.
Die Zeitanzeige erlischt und das Mikrowellengerät wird für eine Minute mit voller Leistung eingeschaltet.



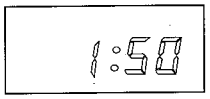
HINWEIS: Bei jedem weiteren Tastendruck auf +MIN wird die Garzeit um eine Minute verlängert.

Nach Ablauf der Garzeit ertönen vier akustische Signale. Die Zeitanzeige erscheint wieder im Anzeigenfeld. Der Garvorgang kann jederzeit durch Drücken der CANCEL-Taste abgebrochen werden.

Garstufe für Popcorn (M6148)

Diese Funktion dient speziell der Zubereitung von Popcorn. Sie müssen lediglich unterscheiden, ob es gesalzen oder gezuckert ist.

1. Legen Sie das Popcorn in die Mitte des Drehtellers. Schließen Sie die Gerätetür.
2. Stellen Sie das dem Popcorn entsprechende Programm ein.



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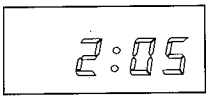


(GESALZEN)

Achtung: Wenn Sie Popcorn zubereiten, bleiben Sie in der Nähe des Mikrowellenherdes und achten Sie darauf, daß sich der Drehteller dreht. Ist dies nicht der Fall, kann sich das Popcorn entzünden. Achten Sie auch darauf , daß das Popcorn immer in der Mitte des Drehtellers liegt.

Measurements & Adjustments

WARNING

FOR CONTINUED PROTECTION AGAINST RADIATION HAZARD, REPLACE PARTS IN ACCORDANCE WITH THE WIRING DIAGRAM AND BE SURE TO USE THE CORRECT PARTS FOR THE FOLLOWING SWITCHES: PRIMARY, SECONDARY INTERLOCK SWITCHES AND INTERLOCK MONITOR SWITCH. AFTER REPAIR AND ADJUSTMENT, BE SURE TO CHECK THE CONTINUITY OF PRIMARY, SECONDARY INTERLOCK SWITCHES AND INTERLOCK MONITOR SWITCH.

1. Adjustment of Primary Interlock Switch and Secondary Interlock Switch.

(A) Loosen two screws securing the body latch and adjust the positions of two switches so that the interlock monitor switch opens before the primary interlock switch closes and secondary interlock switch opens when the door is closed tightly to the front cavity.

(B) Fasten the screws tightly.

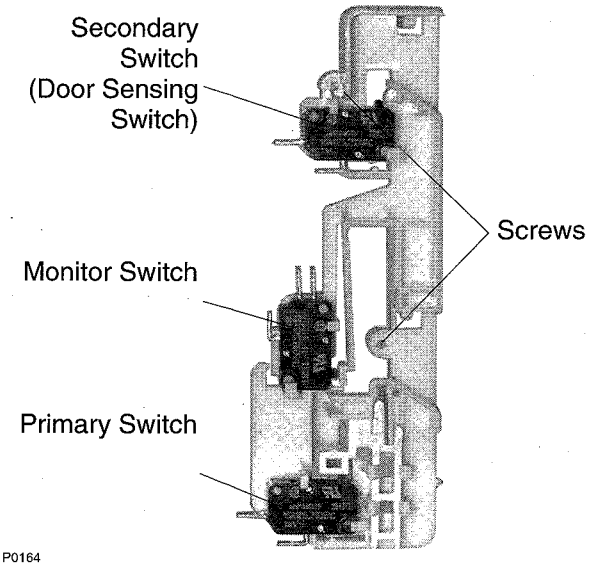
(C) Make sure the energy leakage is within the limit of the regulation (5mW/cm^2) when measured by a detector. (All service adjustments should be made for minimum R.F. emission readings.)

2. Adjustment of Interlock Monitor Switch.

(A) Loosen screws securing the switch body latch and adjust the position so that the interlock monitor switch opens before the primary interlock switch closes when the door is closed tightly to the front cavity.

(B) Fasten the screws tightly.

(C) Make sure the energy leakage is within the limit of the regulation (5mW/cm^2) when measured by a detector (All service adjustments should be made for minimum R.F. emission readings.)



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3. Continuity Check of Interlock Switches

3-1. Primary and Secondary Interlock Switches

With a multimeter, check for continuity between two terminals of the primary interlock switch. The resistance should be 0Ω for door closed and ∞Ω for door-opened under normal condition. Likewise check the primary switch terminals. And the result should be opposite to the primary switch.

3-2. Interlock Monitor Switch

Check for the continuity between two terminals of the monitor switch. The resistance should be ∞Ω for door closed and 0Ω for door opened under normal condition.

4. Measurement for the Output Power of Magnetron

The output power of the magnetron can be simply measured by performing a water temperature rise test.

Necessary test equipment for the test:

* One 1-liter cylindrical borosilicate glass vessel (outside diameter of 190 mm)
* One glass thermometer with mercury column

NOTE: Check the line voltage under load. Low voltage will lower the power of magnetron. Take all temperature and time tests with accurate equipment.

(A) Fill the glass vessel with 1 liter of water.(10±2°C).

(B) Stir the water in the vessel with the thermometer and record the water temperature.
Glass Vessel's Temperature = T1

(C) Place the glass vessel on the center of the cooking tray. Set the oven in high power for one minute. Heat the water for exactly one minute.

(D) When the heating finishes, stir the water again with the thermometer and measure the temperature rise as T2.

(E) Subtract T1 from T2. This gives you the temperature rise of the water. (ΔT)

(F) The output power is obtained by the following formula;

$$\text{Output power} = \frac{4.187 \times 1000 \times \Delta T}{60}$$

60 : Heating time (sec)
4.187 : Coefficient for water
1000 : Water (cc)
ΔT : Temperature rise (T2 - T1)

*** Output(w) = 70 x ΔT**

(G) The normal temperature rise for this model is 9°C to 11°C (48.2°F to 51.8°F) at "High" power setting.

NOTE : Variations or errors in the test procedure will cause a variance on the temperature rise. Additional power test should be made if the temperature rise is marginal.

Measurements & Adjustments (Leakage Measuring Procedure)

1. Equipment

* Microwave Energy Survey Meter
* 600cc glass beaker
* Mercurial or digital thermometer 100°C or 212°F

2. Procedure for Measurement of Microwave Energy Leakage

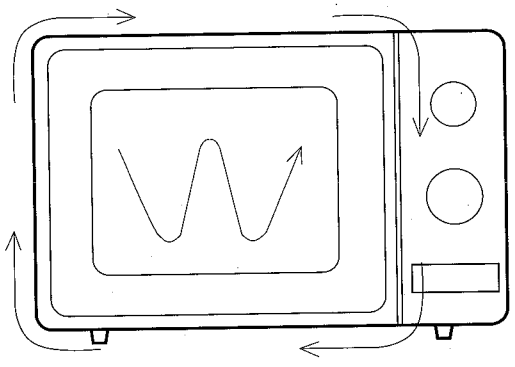
(A) Pour 275±15cc of 20±5°C (68±9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.

(B) Start to operate the oven and measure the leakage by using a microwave energy survey meter.

(C) Set survey meter with dual ranges to 2450MHz.

(D) When measuring the leakage, always use 2 inch spacer cone with the probe. Hold the probe perpendicular to the cabinet door. Place the spacer cone of the probe on the door and/or cabinet door seam and move along the seam, the door viewing window and the exhaust openings moving the probe in a clockwise direction at a rate of 1 inch/sec. If the leakage testing of the cabinet door seam is taken near a corner of the door, keep the probe perpendicular to the areas making sure that the probe end at the base of the cone does not get closer than 2 inches to any metal. If it gets closer than 2 inches, erroneous readings may result.

(E) Measured leakage must be less than 5mW/cm², after repair or adjustment. During the test, pull the door slightly towards "open" prior to interruption of latch switch (primary).



d0039

3. Check of Microwave Energy Leakage with Outer Panel Removed.

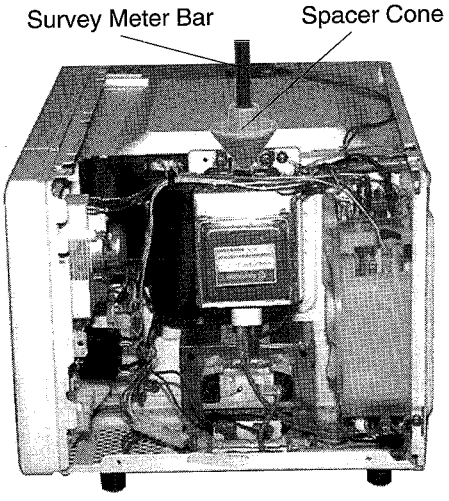
(A) Remove the outer panel as described in step 1 in page 21.

(B) Pour 275±15cc of 20±5°C (68±9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.

(C) Start to operate the oven at the highest power level.

(D) Set survey meter with dual ranges to 2,450MHz.

(E) By using the survey meter and spacer cone as described above, measure around the opening area of magnetron, the surface of the air guide and the surface of the waveguide as shown in figure below but avoid the high voltage components. The meter should read less than 5mW/cm².



P0132

WARNING

AVOID THE HIGH VOLTAGE COMPONENTS.

4. Note on measurement

(A) Do not exceed the limited scale.

(B) The test probe must be held on the grip of the handle, otherwise a false reading may result when the operator's hand is between the handle and the probe.

(C) When high leakage is suspected, do not move the probe horizontally along the oven surface; this may cause probe damage.

(D) Follow the recommendation of the manufacturer of the microwave energy survey meter.

5. Record keeping and notification after measurement

(A) After adjustment and repair of a radiation preventing device, make a repair record for the measured values, and keep the data.

(B) If the radiation leakage is more than 5mW/cm² after determining that all parts are in good condition, functioning properly and the identical parts are replaced as listed in this manual, notify that fact to; **CENTRAL SERVICE CENTER**

6. At least once a year have the Microwave Energy Survey Meter checked for accuracy by its manufacturer.

Problems not Related to Defects of Oven

When you get complaint from your customer, please analyze the complaint carefully before visiting the customer. If the following symptoms apply, please educate the customer on proper use of the microwave oven in order to eliminate unnecessary service call.

CONDITION	CAUSE	REMEDY
Microwave oven does not work.	Inserting many plugs into one plug receptacle and using them at the same time causes over loading.	Avoid using other electrical appliances during use of microwave oven.
	Microwave oven plug is not inserted tightly.	Insert tightly the plug of microwave oven.
Output power is too low	Low line voltage	Use the microwave oven at adequate line voltage.
	The food is too cold or frozen.	This is not an actual problem. Please expect to cook a little longer.
Sparks	Metallic ware or cooking dishes touching on the oven wall	Educate your customer.
	Ceramic ware trimmed with gold or silver powder also causes sparks.	Do not use any type of cookware with metallic trimming.
Uneven cooking	Uneven intensity of microwave due to its characteristics.	1. Wrap thinner parts of the food with aluminum foil. 2. Use plastic wrap or cover with a lid. 3. Stir once or twice while cooking foods such as soup, cocoa or milk.
Click noise from the turntable motor when it starts to operate.	The noise may come from the motor.	Educate your customer.

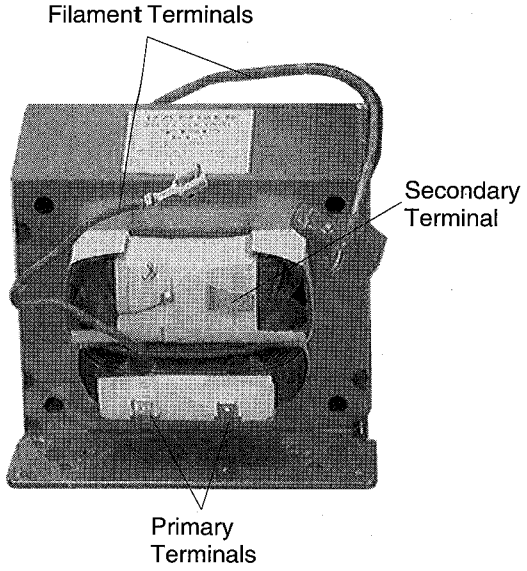
Component Test Procedure

High voltage exists at the high voltage terminal of the high voltage transformer during cooking. Before touching oven components or wiring, always unplug the oven from its power source and discharge the capacitor (See page 20).

1. High Voltage Transformer

(A) Remove connectors from the transformer terminals and check continuity.

(B) Normal readings should be as follows.
Secondary----------Approx. 110Ω
Primary----------Approx. 2.0Ω



P0134

2. High Voltage Capacitor

(A) Check continuity of capacitor with meter at the highest ohm scale.

(B) Once the capacitor is charged, a normal capacitor shows continuity for a short time, and then indicate 10MΩ.

(C) A shorted capacitor will show continuity.

(D) An open capacitor will show constant 10MΩ.

(E) Resistance between each terminal and chassis should be infinite.

3. High Voltage Diode

The diode is located between H.V.C. and the cavity.

(A) Isolate the diode from the circuit by disconnecting its leads.

(B) With the ohm-meter set at the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and read the resistance. A meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions. The resistance of a normal diode will be infinite in one direction and several hundred KΩ in the other direction.

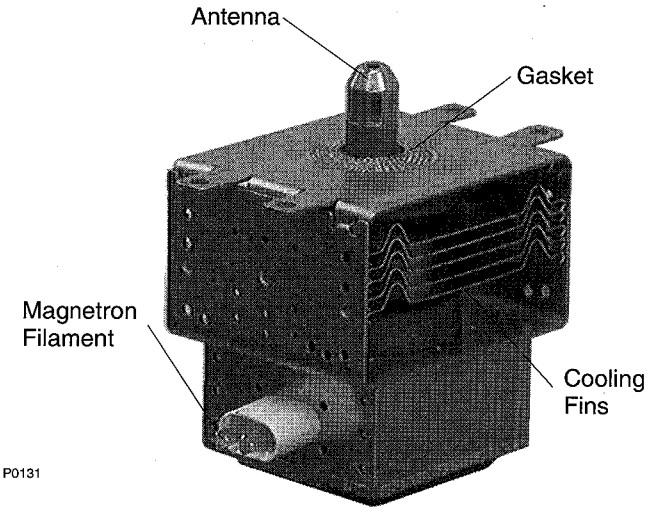
4. Magnetron

For complete diagnosis of the magnetron, refer to "Measurement of the Magnetron Output" (page 6). Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose an open filament or shorted magnetron;

(A) Isolate the magnetron from the circuit by disconnecting its leads.

(B) A continuity check across the magnetron filament terminals should indicate one ohm or less.

(C) A continuity check between each filament terminal and magnetron case should read open.



P0131

5. Low Voltage Transformer (M6148)

The low voltage transformer is located on the control circuit board.

(A) Remove the lead wire connectors from lead wire harness and check continuity.

(B) Normal reading of primary winding is about 650 ohms.

6. Secondary Switch Relay and Main Relay (M6148)

The relays are located on the control circuit board.

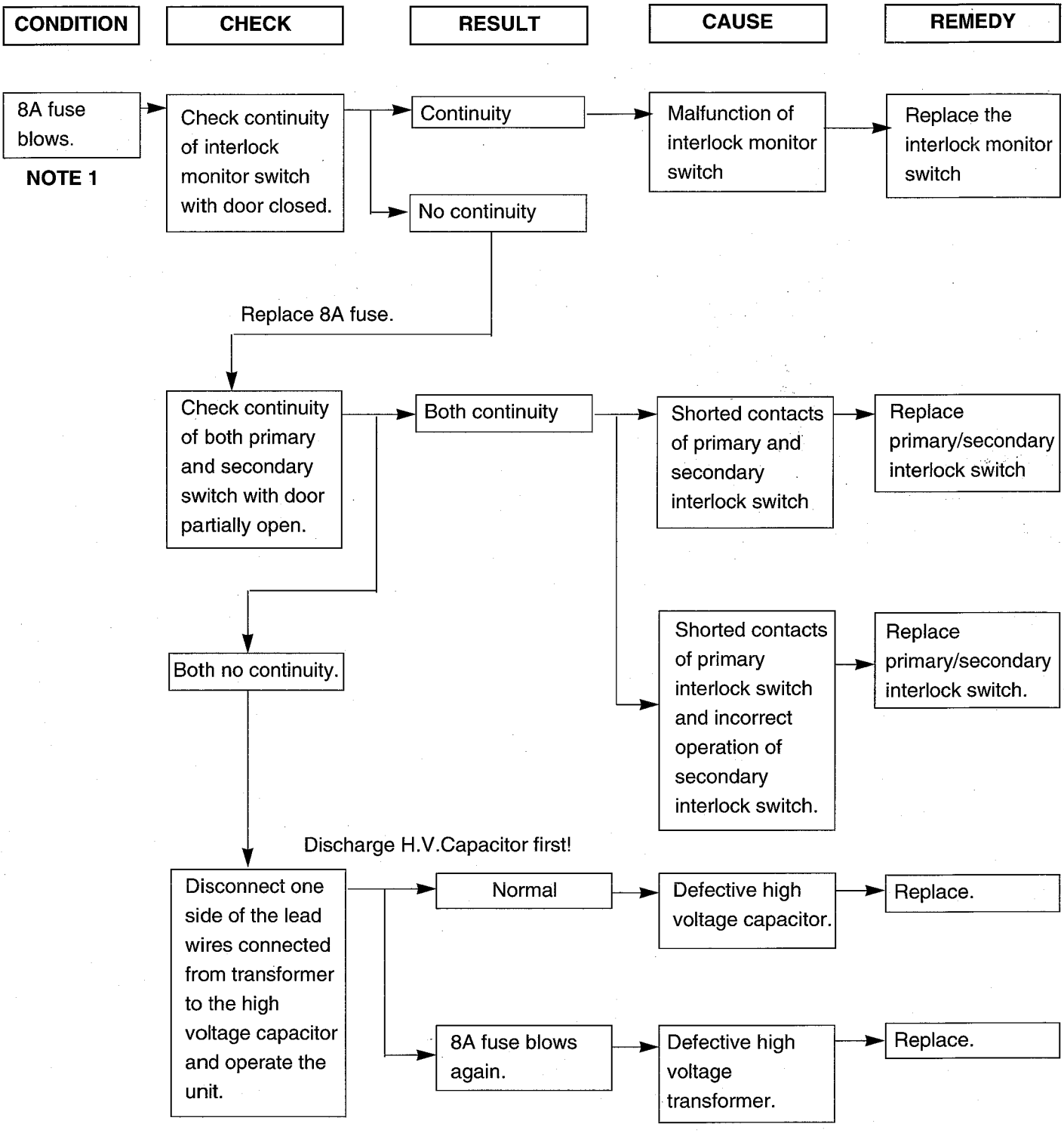
(A) Isolate the relays from the main circuit by disconnecting the leads.

(B) Operate the microwave oven with a water load inside the oven and power level at high setting.

(C) Check the continuity between the terminals of relays.

Troubleshooting Guide

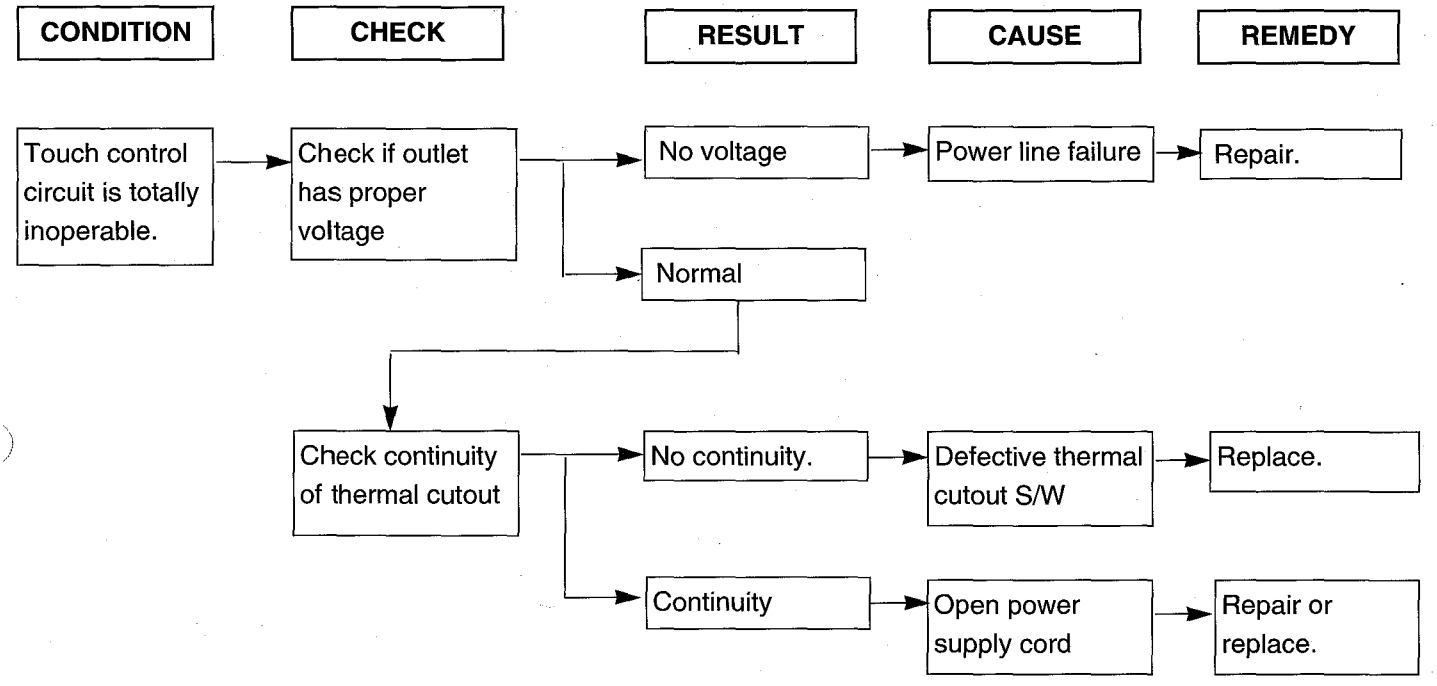
[TROUBLE 1] Oven does not operate, oven lamp does not light and fan motor does not rotate, even though desired cooking function and time are set and the start pad is touched.


CONDITION
CHECK
RESULT
CAUSE
REMEDY
8A fuse blows.
NOTE 1
Check continuity of interlock monitor switch with door closed.
Continuity
Malfunction of interlock monitor switch
Replace the interlock monitor switch
No continuity
Replace 8A fuse.
Check continuity of both primary and secondary switch with door partially open.
Both continuity
Shorted contacts of primary and secondary interlock switch
Replace primary/secondary interlock switch
Shorted contacts of primary interlock switch and incorrect operation of secondary interlock switch.
Replace primary/secondary interlock switch.
Both no continuity.
Discharge H.V.Capacitor first!
Disconnect one side of the lead wires connected from transformer to the high voltage capacitor and operate the unit.
Normal
Defective high voltage capacitor.
Replace.
8A fuse blows again.
Defective high voltage transformer.
Replace.

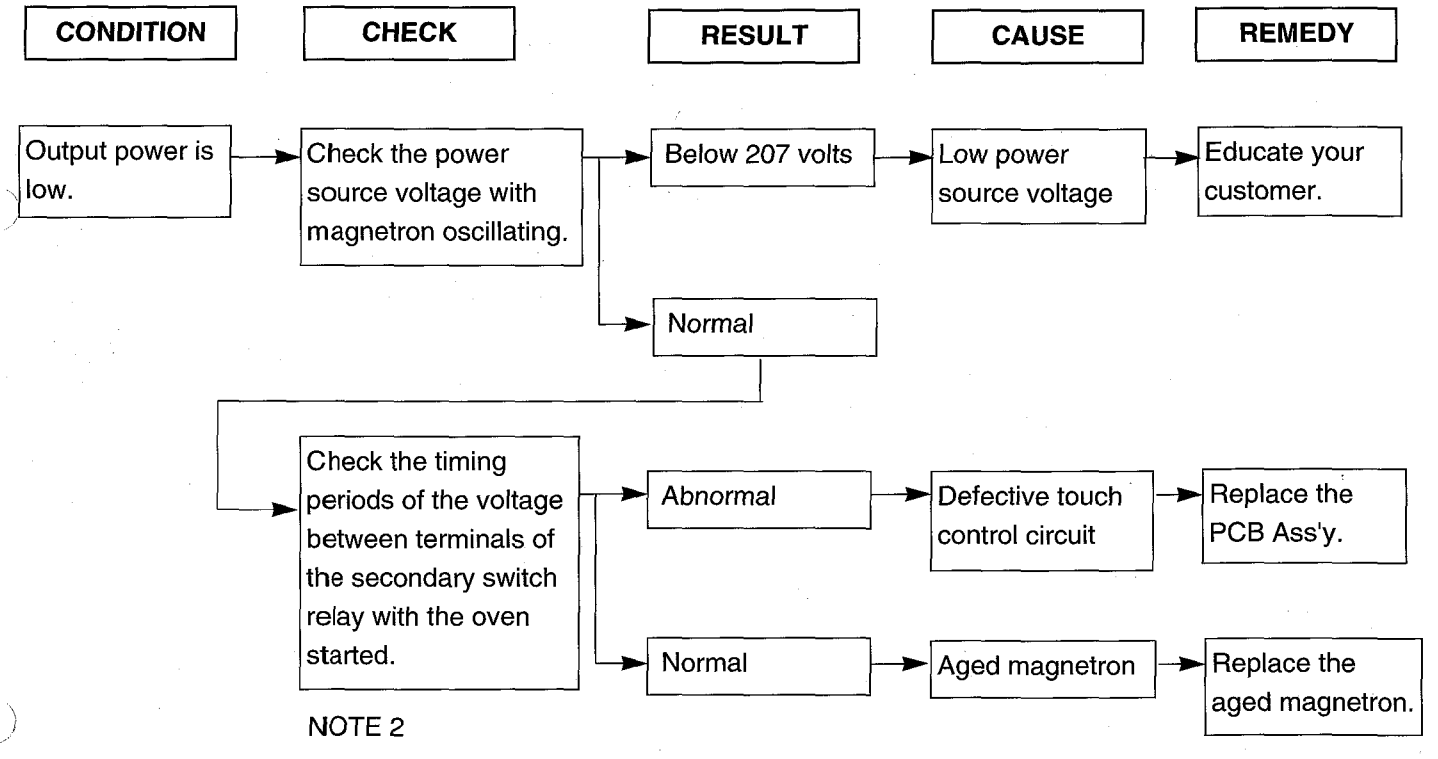
NOTE 1: Before following the particular steps listed for the 8Amp fuse's failure, check for other obvious causes that would contribute to its failure such as shorted fan motor, etc.

Troubleshooting Guide

[TROUBLE 2] Touch control circuit inoperable.



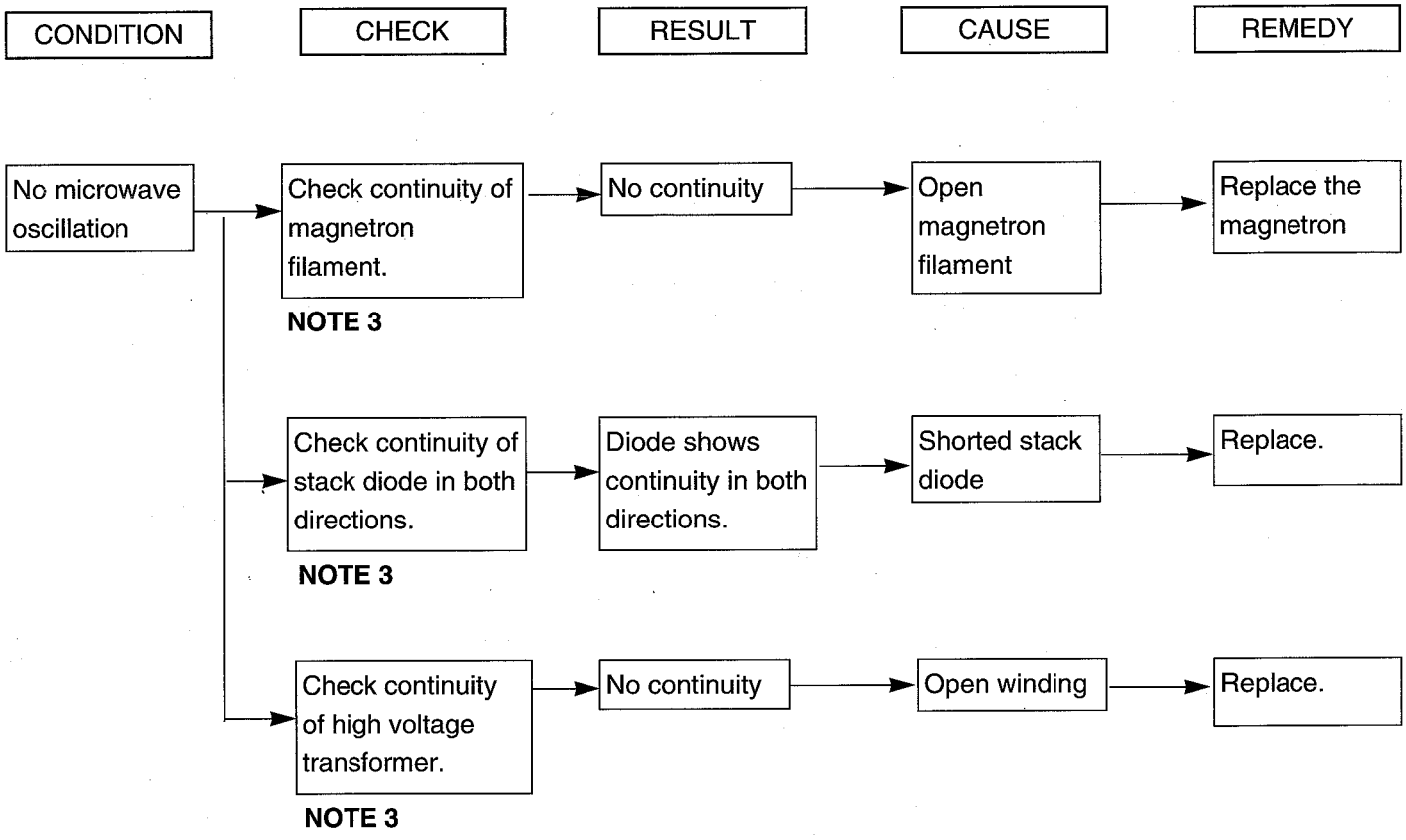
[TROUBLE 3] Output Power is Low. (M6148)



NOTE 2: Refer to the secondary switch relay check procedure in page 14.

Troubleshooting Guide

[TROUBLE 4] Oven does not cook even though oven lamp lights and fan motor rotates.



NOTE 3: Take measurement without operating.

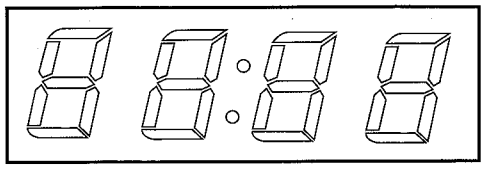
Troubleshooting Guide

Follow the procedures below to check if the touch control circuit is defective.
1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge the high voltage capacitor(see page 20).
4. When checking the continuity of the switches or transformer, disconnect one lead wire from these parts and then check continuity without turning the power source on. To do otherwise may result in a false reading or a damage to your meter.
5. Do not touch any part of the circuit or the touch control circuit board, since static electric discharge may damage this control panel. Always touch ground while working on this panel to discharge any static charge built up in your body.

First of all operate the microwave oven by observing the correct operating procedures by time cooking in order to find the exact cause of any trouble.

[TROUBLE 5] The following visual conditions indicates a probable defective touch control circuit.

1. Incomplete segments
   (A) Incomplete segments
   (B) Partial segments missing
   (C) Digit flickering
   (Other than normal fluorescent light flickering.)
   (D) Colon does not turn on.
2. A distinct change in the brightness of one or more numbers in the display.
3. One or more digits in the display does not light when they should.
4. No indicator lights for the selected cooking function.
5. Display indicates a number different from one touched.
6. Specific pads does not display even when the panel is touched.
7. Display does not count down or clock does not operate.
8. Display obviously skips in time while counting down.
9. Display counts down noticeably too fast while cooking.
10. Display can not shift from first stage cooking to the second stage cooking while 2 phase cooking.



D0212

11. Display continues counting down during time cooking when door-open button is pressed. Check if secondary switch relay shorts when door open button is pressed. It the secondary switch is normal, replace touch control circuit.
12. The time of day in the display does not reappear when the CANCEL pad is touched twice.
13. The oven lamp and fan motor do not stop although cooking is finished. Replace the touch control circuit.

[TROUBLE 6] Digital Readout Display does not show programming, even if the membrane key board is programmed by touching proper pads.

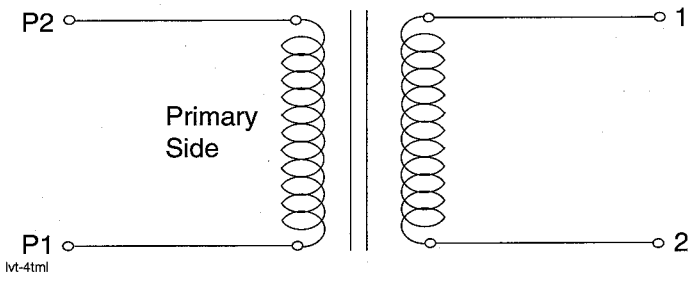
CONDITION	CHECK	RESULT	CAUSE	REMEDY
Display does not show programming at all, even if keyboard is touched	Check each pad continuity of the membrane keyboard as the following keyboard check procedure	Normal	Malfunction of touch control circuit of control assembly	Replace PCB main.
		Abnormal	Malfunction of the membrane keyboard	Replace the membrane keyboard.
	Check the voltage of low voltage transformer secondary windings	Normal	Malfunction of touch control circuit of control box assembly	Replace PCB main.
		Abnormal	Malfunction of the L.V. transformer	Replace the L.V. transformer.

NOTE : Before following the particular step above for the membrane key board's failure, please check of the continuity for each wire harness between the membrane keyboard and touch control circuit.

Troubleshooting Guide

[TROUBLE 7] Microwave oven does not work properly with time cooking.

Primary Voltage / Terminal	230V
1 - 2	10V



NOTE 1: Secondary side voltage of the low voltage transformer changes in proportion to the fluctuation of power source voltage.
NOTE 2: The tolerance of the secondary voltage is within ±5% under normal voltage.

(TROUBLE A) Microwave oven does not operate at all although the start pad is touched. In this case, the oven lamp may come on but not to full brightness and the fan motor may rotate slowly. Also the gear motor may rotate slowly. And the touch control circuit may not detect the key input signal.

(1) Check the primary and secondary voltage of the low voltage transformer. The normal voltage of the L.V. transformer with no load should read as shown in figure above.

* When the voltage is out of the range, replace the low voltage transformer.
* When no voltage at the primary side is obtained, refer to [TROUBLE 1] in the trouble shooting guide of the microwave oven circuit on page 10.

(2) Check the continuity of the secondary switch. The continuity of secondary switch should be checked with one side of the switch open and the power supply cord unplugged. Secondary switch contacts should open with the door closed.

(TROUBLE B) Oven lamp and fan motor operate normally but microwave does not oscillate or cooking time takes too long when compared to the cooking time described in the cookbook.

(1) Operate the microwave oven with a water load in the oven and power level at high selection for a few minutes. Then measure the continuity between the terminal of Secondary Switch Relay with the oven started. Be very cautious of the high voltage. Normal voltage between the two terminals should read 0V AC typical. If the line voltage is applied there, check the continuity of the coil circuit of secondary switch relay. If there is no continuity, replace the secondary switch relay or P.C.B. Ass'y.

(2) If the symptom is that the microwave oven operates normally only at high power setting but does not operate properly at other power settings, measure the timing periods of the line voltage applied to the two terminals of the secondary switch relay. The timing periods of the line voltage being applied at each power setting should read as listed in the table below. When the timing period of the secondary switch relay is other than those listed, replace the PCB Ass'y.

POWER LEVEL (%)	RELAY TURN ON TIME(sec)	RELAY TURN OFF TIME(sec)
10	4	26
30	10	20
50	16	14
70	22	8
100	30	0

<Timing periods of secondary switch relay>

Troubleshooting Guide

Table 1

Parts	Cause	Diagnosis	Remedy
H.V. Transformer	1) Layer short of the secondary winding.	The fuse is blown out not right away but in a few seconds, it is a layer short.	Replace H.V. Transformer.
	2) Open coil of H.V. transformer	Check continuity between primary coil and secondary coil. If there is no continuity, transformer is defective.	Replace H.V. Transformer.
H.V. Capacitor	1) Poor insulation between capacitor terminals.	Check for the continuity between capacitor terminals. If there is continuity, capacitor is defective.	Replace H.V. Capacitor.
	2) Shorted H.V. capacitor	Check continuity of capacitor terminals with wires removed If there is no continuity, transformer is defective.	Replace H.V. Capacitor.
H.V. Diode	1) Shorted Diode	Check the diode with reference to "COMPONENT TEST PROCEDURE" in page 9. If H.V.Diode is shorted the fuse does not blow out, but the H.V.Transformer winding will be hot.	Replace H.V.Diode.
	2) Defective Diode	Check continuity of H.V.Diode forward and backward direction with DC meter. If there is continuity in backward direction, H.V.Diode is defective.(In this case, voltage transformer will be hot.)	Replace H.V.Diode.
Magnetron	1) Open magnetron heater	Check continuity of magnetron heater with wires removed by using a multimeter. If there is no continuity, magnetron heater is open.	Replace magnetron.
	2) Shorted magnetron	Connect measure leads to magnetron terminals and magnetron body. If there is continuity, magnetron is defective.(In this case, main fuse will be blown out.)	Replace magnetron.

Table 2

Parts	Cause	Diagnosis	Remedy
Secondary interlock switch	Poor contacts of secondary interlock switch	Check the terminals for electrical continuity with wires removed by using a multimeter.	Replace or adjust.
Primary interlock switch	Poor contact of primary interlock switch		

Troubleshooting Guide

Table 3

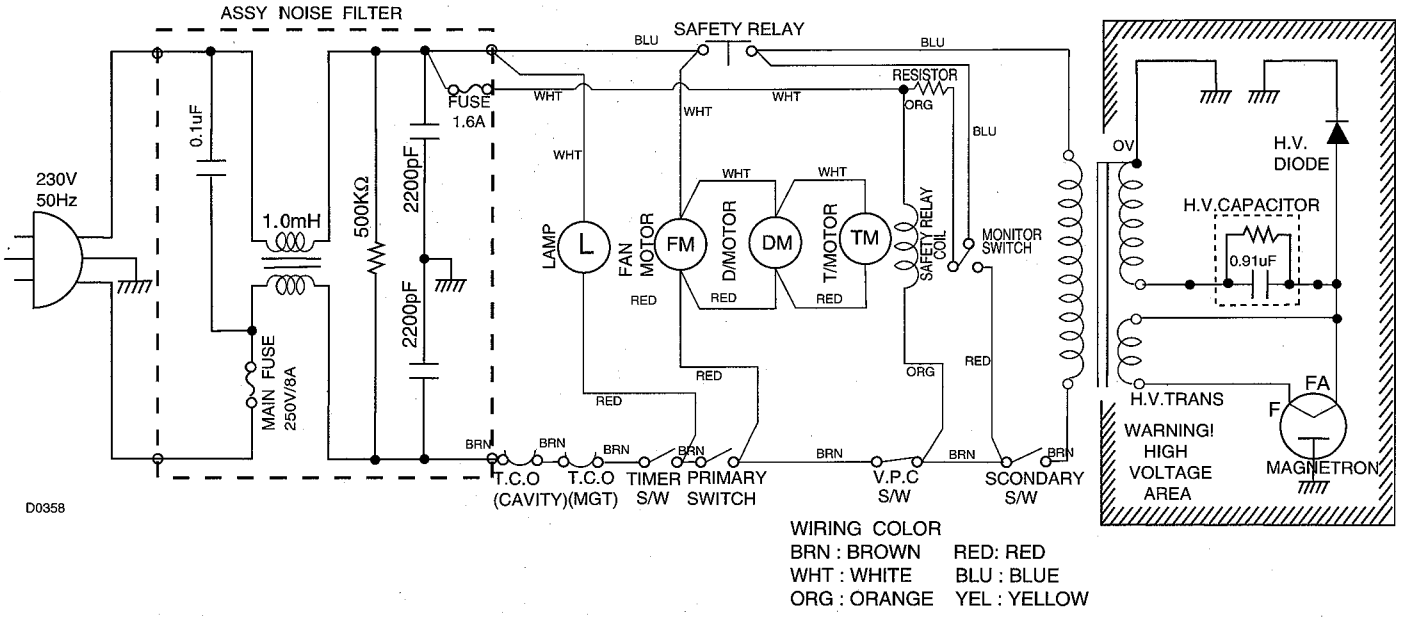
Parts	Cause	Diagnosis	Remedy
Oven lamp does not light when door is opened.	1) Fuse blown out.	Check the fuse.	Replace fuse and check the parts as directed in page 10.
	2) Poor contact of power cord.	Check power cord for continuity. Also check if power leads are securely wired.	Adjust or replace the power cord.
	3) Lamp blown out.	Check the lamp.	Replace the lamp.
	4) Oven and/or Magnetron thermostat open.	The lamp does not light after the lamp is replaced. Check thermostat terminals for continuity with wires removed by using a multimeter. If there is no continuity between terminals, thermostat is defective.	Replace the thermostat.
	5) Defective main relay	If the terminals of main relay are electrically not continued when the door is opened, relay is defective.	Replace the relay.
	6) Defective secondary interlock switch	If the secondary interlock switch is OFF under the open-door condition, the switch is defective.	Replace or adjust.
Fan motor not operate and cooking tray does not turn.	1) Defective fan motor.	If motor does not operate at 230V applied to motor terminals, motor may be faulty.	Replace the motor.
	2) Defective drive motor	Check if 230V exists at motor terminals. If so, motor is defective.	Replace the drive motor.
	3) Poor drive of the roller or turntable	Check if dust accumulates on the roller or on the turntable.	Clean the roller or the turntable.
Sparking or arcing cavity.	Carbonized dust in oven.	Check if dust accumulates on the splatter shield or on its support.	Clean the oven cavity.
Microwave not oscilla-ting during operation.	1) Too small load of food	If a small amount of food is cooked for a long time, microwave oscillation is turned off during operation.	To increase load, add a cup of water in the oven.
	2) Defective magnetron thermostat	Check thermostat terminals for continuity with wires removed by using a multimeter. If there is no continuity, thermostat is defective.	Replace the thermostat.

Wiring Diagram

MODEL NAME : M6138

CONDITION OF OVEN : DOOR IS OPENED

WARNING POWER MUST BE DISCONNECTED BEFORE SERVICING THIS APPLIANCE.



WIRING COLOR

BRN : BROWN RED: RED

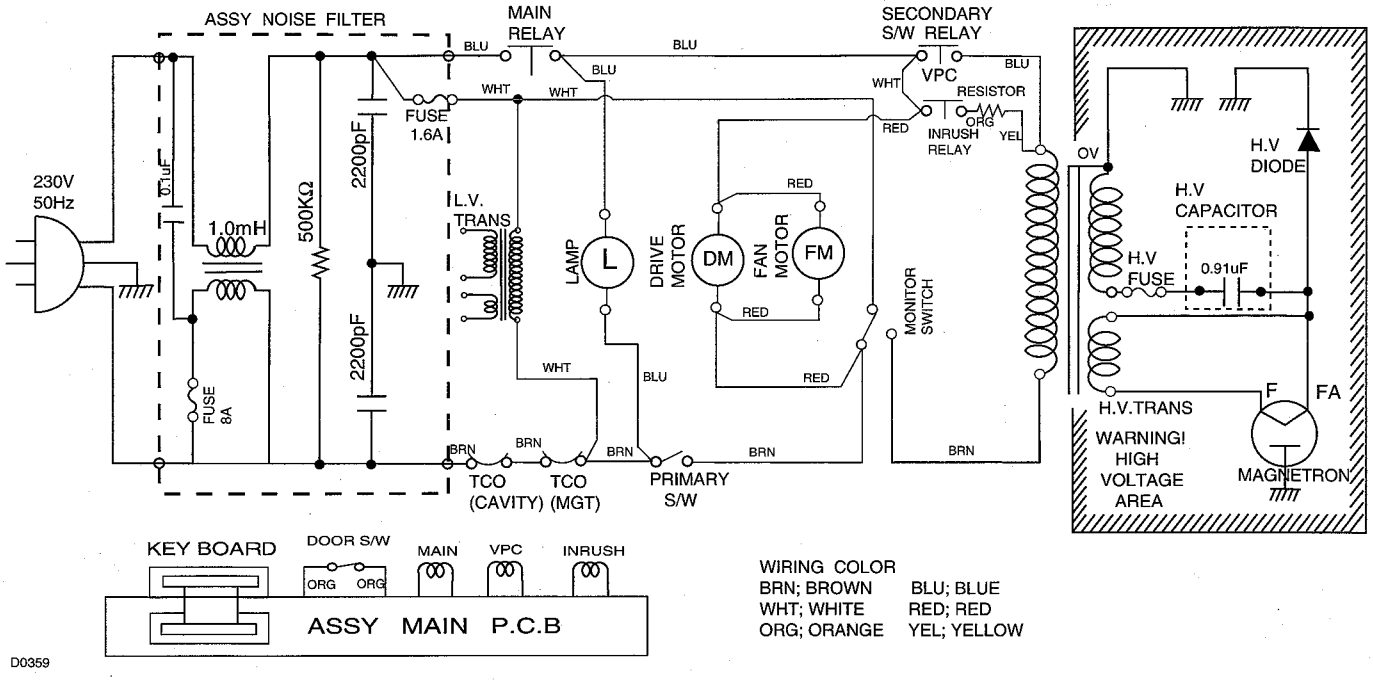
WHT : WHITE BLU : BLUE

ORG : ORANGE YEL : YELLOW

MODEL NAME :M6148

CONDITION OF OVEN : DOOR IS OPENED.

WARNING POWER MUST BE DISCONNECTED BEFORE SERVICING THIS APPLIANCE.



WIRING COLOR

BRN; BROWN BLU; BLUE

WHT; WHITE RED; RED

ORG; ORANGE YEL; YELLOW

IMPORTANT SAFETY NOTE :

The shaded area on the schematic diagram indicates that potentials over 2500V exist on the parts and the wiring with the oven energized. Extreme care should be taken during repair. When servicing it is essential that only manufactures' specified parts be used for the critical components on the shaded area of the schematic diagram.

Circuit Descriptions (M6138)

Refer to the wiring diagram in page 17.

1. When the food is placed inside the oven and the door is closed.

(A) When the power cord is plugged in, the oven lamp stays unlit. (The interlock monitor switch opens. This interlock monitor switch acts to blow 8A fuse and stop magnetron oscillation when the door is opened during operation under an abnormal condition.)

(B) The door key is caught by the hook and the primary and the secondary interlock switch are closed.

2. When cooking cycle, power and time are set.

(A) Set the cooking time by rotating the timer knob.

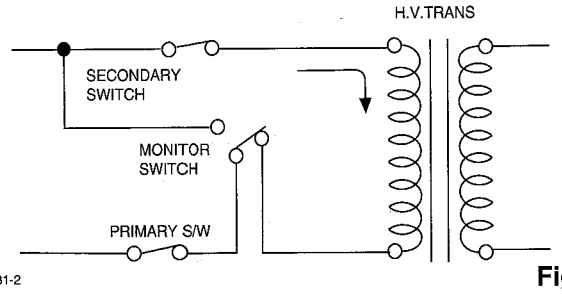
(B) Select the power level by rotating the variable power control knob.

(C) In this case, the oven lamp lights.

3. When the timer knob is rotated

(A) The fan motor rotates and cools the magnetron by blowing air coming from the intake on the back panel over the magnetron fins, this air is directed into the oven to blow out the vapor and odor. And the drive motor operates to turn the tray for even cooking.

(B) 230V/50Hz is applied to the high voltage transformer through the contacts of primary and secondary switches shown by the solid line(Fig.1)



M6131-2

Fig. 1

(C) 3.15 volt AC is generated from the filament winding of the high voltage transformer. This 3.15 volt is applied to the magnetron to heat the magnetron filament through two noise preventing choke coils.

(D) A high voltage of 2,200 voltage transformer and this secondary voltage is increased by the rectifying action of the diode and the charging of the high voltage capacitor. This resultant DC voltage is then applied to the anode of the magnetron. As shown in Fig.2 the first half cycle of the high voltage produced in the high voltage transformer secondary charges the high voltage capacitor. Current flow is in the direction of the dotted line.

During the second half cycle, the voltage produced by the transformer secondary and the charging of the high voltage capacitor are combined and applied to the magnetron as shown by the solid line so that oscillations begin.

(E) When the oven is set at any power level other than full, the variable timer motor controls the ON-OFF time of variable power switch in order to vary the output power of the microwave oven from low to full power. One complete on and off cycle of the variable power switch is 30 seconds.

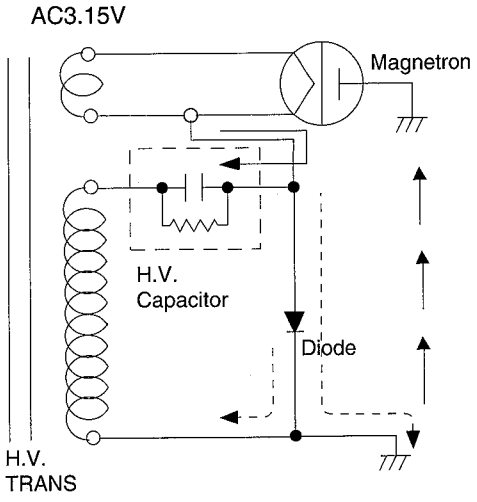


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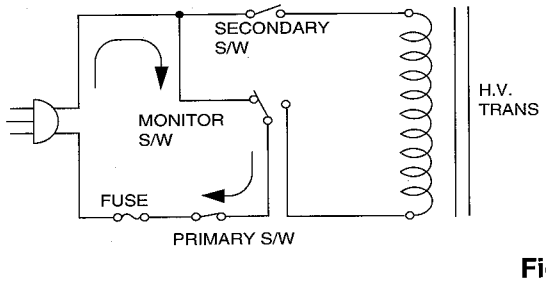
Fig. 2

4. When the door is opened during cooking

(A) The primary switch and secondary switch are opened to cut off the primary voltage of the high voltage transformer to stop microwave oscillation, also the fan motor and drive motor are turned off, but the oven lamp remains lit until the timer is turned off.

(B) As soon as the door is opened, the contacts of secondary switch and the contacts of primary switch open and the interlock monitor switch closes short circuiting the unpowered AC line.

(C) If the contacts of primary interlock switch does not function, the 8A fuse blows due to the large current surge caused by the short switch activation. (Fig. 3)



M6131-1

Fig. 3

Circuit Descriptions (M6148)

Refer to the wiring diagram in page 17.

1. When the food is placed inside the oven and the door is closed

(A) The low voltage transformer supplies voltage to the touch control circuit.

(B) The primary interlock switch and the secondary interlock switch are closed.

(C) The interlock monitor switch opened. This interlock monitor switch acts to blow 8A fuse and stop magnetron oscillation when the door is opened during operation under an abnormal condition.(i.e.the contacts of primary and secondary interlock switch do not open the circuit to stop oscillation)

(D) The door key is caught by the door hook, the secondary switch is opened to give the door-close signal to touch control circuit.

2. When cooking cycle, power and time are set by touching the function pads and the desired numerical pads

(A) The cooking function indicator shown on the display window blinks to indicate the selected function.

(B) The time set appears in the display window.

(C) The touch control circuit stores the cooking data set.

3. When the START pad is touched

The main relay and the secondary switch relay are energized by the touch control circuit.

(A) The oven lamp lights the inside of the oven by operation of the main relay in the touch control circuit.

(B) The fan motor rotates and cools the magnetron by blowing air coming from the intake on the back panel over the magnetron fins. After cooling the fins, the air is directed into the oven to blow out the vapor and odor in the oven through the rear vents.

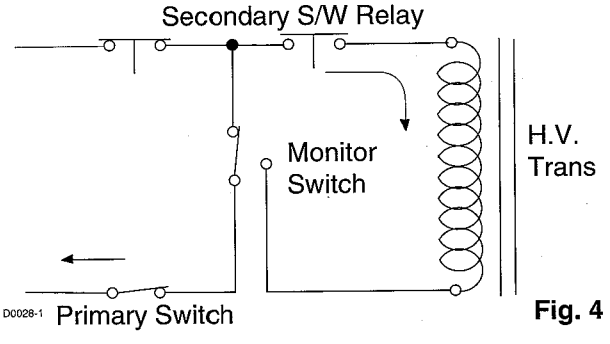


Fig. 4

(C) 230V/50Hz is applied to the high voltage transformer through the contacts of primary and secondary switches shown by the solid line just after the power control relay turns ON. (Fig. 4)

(D) 3.15 volt AC is generated from the filament winding of the high voltage transformer. This 3. 15volt is supplied to the magnetron to heat the magnetron filament through two noise preventing choke coils.

(E) High voltage of 2,200 volts AC is generated from the secondary high voltage transformer and this secondary voltage is increased by the action of the diode and charging of the high voltage capacitor. This resultant D.C.voltage is then applied to the anode of the magnetron. The first half cycle of the high voltage produced in the secondary high voltage transformer charges the high voltage capacitor. During operation of the second half cycle, the voltage produced by the secondary transformer and the charge of the high voltage capacitor are combined and applied to the magnetron so that magnetron starts to oscillate. The interference wave generated from the magnetron is prevented by the 1.6μH choke coils, 500pF filter capacitors and the magnetron's shielded case so that TV and radio signals are not interfered with.

(F) The secondary switch relay is intermittently turned on by the touch control circuit, when the oven is set at any power level other than full. The touch control circuit controls the ON/OFF time of the secondary switch relay in order to vary the output power of the microwave oven. The time of one complete ON/OFF cycle of the power control relay is 30 seconds.

(G) The cooking time shown in the display starts to count down.

4. When the door is opened during cooking

(A) The primary and the secondary switch relay is opened to cut off the primary voltage of the high voltage transformer to stop microwave oscillation.

(B) The secondary switch is closed to give the door open signal to touch control circuit. The contacts of the main relay are closed, the secondary switch relay turns off and the display stops counting down.

(C) The fan motor and drive motor stop operation via the interlock switches. The cavity lamp lights the inside of the oven again by closing the main relay until the door is closed.

(D) Upon opening the door, the primary switch is opened and the secondary switch relay is opened and the interlock monitor switch is closed short circuiting the unpowered AC line.

(E) If the primary interlock switch does not function, 8A fuse blows due to the large current surge caused by the short switch activation. (See Fig. 5)

Circuit Descriptions (M6148)

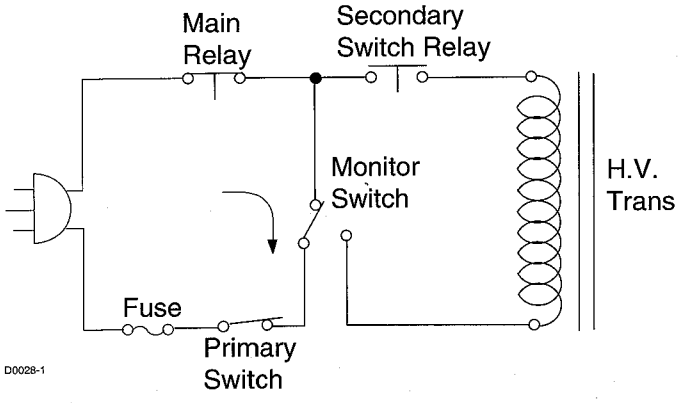


Fig. 5

5. When the CANCEL pad is touched during cooking

(A) Touching CANCEL once stops the oven operation.
(B) Touching CANCEL a second time cancels all the programmes stored in the touch control circuit. The time of day reappears on the display window.
(C) The oven lamp and all cooking indicators turn off.
(D) The fan motor stops.
(E) The drive motor stops.
(F) The secondary switch relay turns off to cut primary voltage on the high voltage transformer. The magnetron stops oscillating.

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

UNLIKE MANY OTHER APPLIANCES THE MICROWAVE OVEN IS A HIGH VOLTAGE/HIGH CURRENT PIECE OF EQUIPMENT. THOUGH IT IS FREE FROM DANGER IN ORDINARY USE, EXTREME CARE SHOULD BE TAKEN DURING REPAIR.

PACEMAKER WEARERS MUST CONSULT THEIR PHYSICIAN BEFORE SERVICING.

SERVICEMEN SHOULD REMOVE THEIR WATCHES WHENEVER WORKING CLOSE TO OR REPLACING THE MAGNETRON.

THERE EXISTS HIGH VOLTAGE ELECTRICITY WITH HIGH CURRENT CAPABILITIES IN THE CIRCUITS OF THE HIGH VOLTAGE TRANSFORMER SECONDARY. IT IS EXTREMELY DANGEROUS TO WORK ON OR NEAR THESE CIRCUITS WITH THE OVEN ENERGIZED.

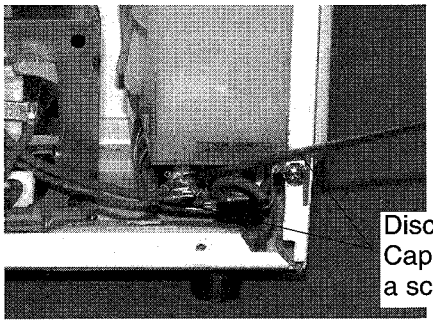
DO NOT TOUCH ANY PART OF THE CIRCUITRY ON THE TOUCH CONTROL CIRCUIT, SINCE A STATIC ELECTRIC DISCHARGE MAY DAMAGE THIS CONTROL PANEL.

1. Check the ground.

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure that the oven should be grounded prior to repair.

2. Warning about the electric charge in the high voltage capacitor.

As an electric charge in the high voltage capacitor remains for about 30 seconds after the operation is stopped, short the current between the oven chassis and the negative terminal of the high voltage checking parts.



Discharge H.V. Capacitor with a screw driver.

p0133

3. When parts must be replaced, remove the power plug from the outlet.

4. Avoid inserting any foreign materials, etc. through any hole in the units during operation.

Never insert any foreign material or any metal object through the lamp hole on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

5. Pacemaker wearers should consult their physician before attempting service or repair to a microwave oven. For additional information on this subject, write to manufacturer of your pacemaker.

6. Confirm after repair:

(A) After repair or replacement of parts, make sure that the screws of the oven are neither loosened nor missing; to prevent the possibility of microwave leakage.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for radiation leakage.(Refer to the procedure for leakage measuring in page 7).

Circuit Descriptions (M6148)

Refer to the wiring diagram in page 17.

1. When the food is placed inside the oven and the door is closed

(A) The low voltage transformer supplies voltage to the touch control circuit.

(B) The primary interlock switch and the secondary interlock switch are closed.

(C) The interlock monitor switch opened. This interlock monitor switch acts to blow 8A fuse and stop magnetron oscillation when the door is opened during operation under an abnormal condition.(i.e.the contacts of primary and secondary interlock switch do not open the circuit to stop oscillation)

(D) The door key is caught by the door hook, the secondary switch is opened to give the door-close signal to touch control circuit.

2. When cooking cycle, power and time are set by touching the function pads and the desired numerical pads

(A) The cooking function indicator shown on the display window blinks to indicate the selected function.

(B) The time set appears in the display window.

(C) The touch control circuit stores the cooking data set.

3. When the START pad is touched

The main relay and the secondary switch relay are energized by the touch control circuit.

(A) The oven lamp lights the inside of the oven by operation of the main relay in the touch control circuit.

(B) The fan motor rotates and cools the magnetron by blowing air coming from the intake on the back panel over the magnetron fins. After cooling the fins, the air is directed into the oven to blow out the vapor and odor in the oven through the rear vents.

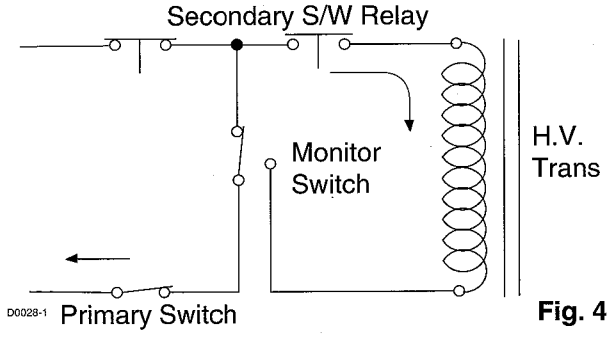


Fig. 4

(C) 230V/50Hz is applied to the high voltage transformer through the contacts of primary and secondary switches shown by the solid line just after the power control relay turns ON. (Fig. 4)

(D) 3.15 volt AC is generated from the filament winding of the high voltage transformer. This 3. 15volt is supplied to the magnetron to heat the magnetron filament through two noise preventing choke coils.

(E) High voltage of 2,200 volts AC is generated from the secondary high voltage transformer and this secondary voltage is increased by the action of the diode and charging of the high voltage capacitor. This resultant D.C.voltage is then applied to the anode of the magnetron. The first half cycle of the high voltage produced in the secondary high voltage transformer charges the high voltage capacitor. During operation of the second half cycle, the voltage produced by the secondary transformer and the charge of the high voltage capacitor are combined and applied to the magnetron so that magnetron starts to oscillate. The interference wave generated from the magnetron is prevented by the 1.6μH choke coils, 500pF filter capacitors and the magnetron's shielded case so that TV and radio signals are not interfered with.

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(B) The secondary switch is closed to give the door open signal to touch control circuit. The contacts of the main relay are closed, the secondary switch relay turns off and the display stops counting down.

(C) The fan motor and drive motor stop operation via the interlock switches. The cavity lamp lights the inside of the oven again by closing the main relay until the door is closed.

(D) Upon opening the door, the primary switch is opened and the secondary switch relay is opened and the interlock monitor switch is closed short circuiting the unpowered AC line.

(E) If the primary interlock switch does not function, 8A fuse blows due to the large current surge caused by the short switch activation. (See Fig. 5)

Circuit Descriptions (M6148)

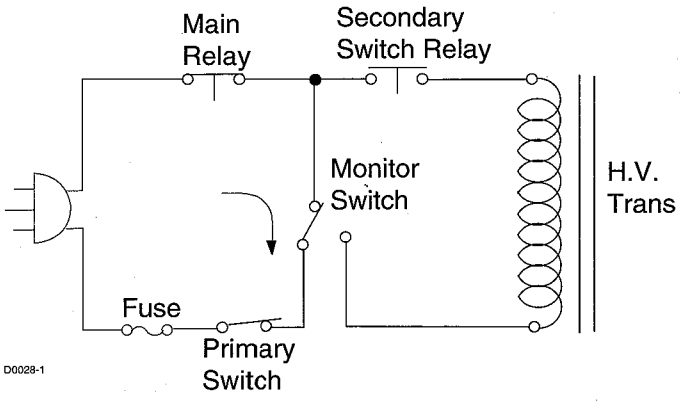

Fig. 5

5. When the CANCEL pad is touched during cooking

(A) Touching CANCEL once stops the oven operation.
(B) Touching CANCEL a second time cancels all the programmes stored in the touch control circuit. The time of day reappears on the display window.
(C) The oven lamp and all cooking indicators turn off.
(D) The fan motor stops.
(E) The drive motor stops.
(F) The secondary switch relay turns off to cut primary voltage on the high voltage transformer. The magnetron stops oscillating.

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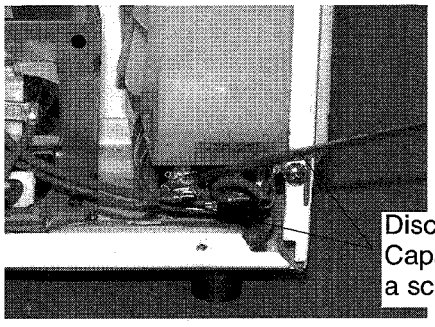
1. Check the ground.
Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure that the oven should be grounded prior to repair.

2. Warning about the electric charge in the high voltage capacitor.
As an electric charge in the high voltage capacitor remains for about 30 seconds after the operation is stopped, short the current between the oven chassis and the negative terminal of the high voltage checking parts.



Discharge H.V. Capacitor with a screw driver.

p0133

3. When parts must be replaced, remove the power plug from the outlet.

4. Avoid inserting any foreign materials, etc. through any hole in the units during operation.
Never insert any foreign material or any metal object through the lamp hole on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

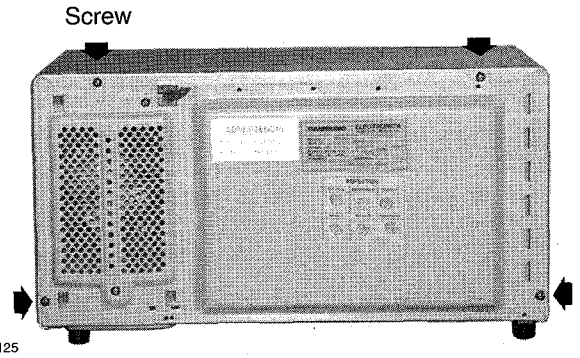
5. Pacemaker wearers should consult their physician before attempting service or repair to a microwave oven. For additional information on this subject, write to manufacturer of your pacemaker.

6. Confirm after repair:
(A) After repair or replacement of parts, make sure that the screws of the oven are neither loosened nor missing; to prevent the possibility of microwave leakage.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for radiation leakage.(Refer to the procedure for leakage measuring in page 7).

Disassembly & Parts Replacement Procedure

1. Replacement of Outer Panel

Remove screws from the rear and each side. The outer panel can now be lifted off by pulling backward.



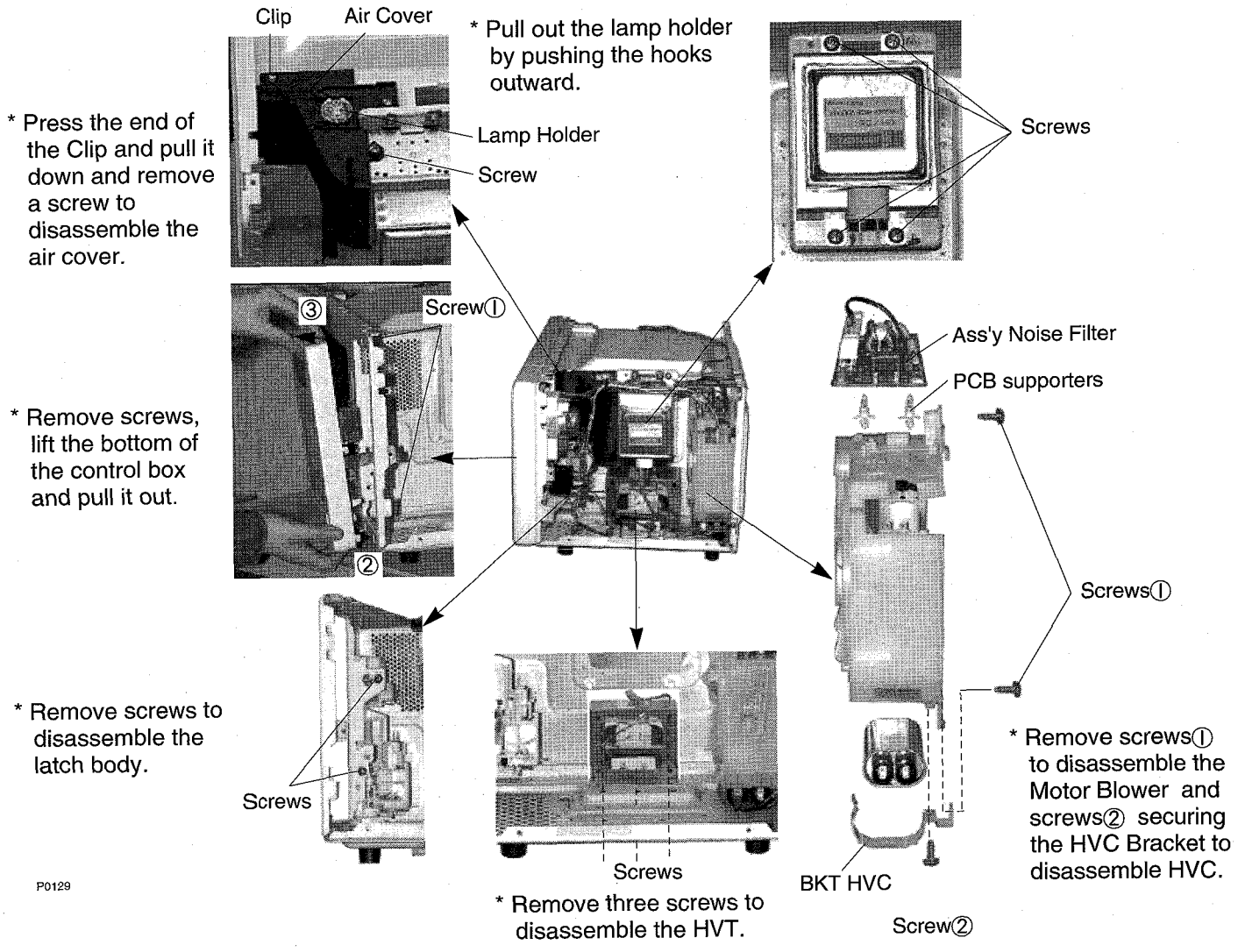
P0125

Note: Before attempting any service, be sure that the power cord is unplugged. After removing the outer panel **discharge H.V.Capacitor** by shoring the screw driver on the oven chassis and the negative terminal of H.V.Capacitor. (refer to page 20.)

Note: When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may not be damaged. Do not disconnect lead wires from the thermal switch if it is not damaged.

Note: Servicemen should remove their watches whenever working close to or replacing the magnetron.

2. Replacement of Oven Lamp, Control Box Ass'y, Magnetron, Latch Body, H.V.Transformer, Blower Motor, Ass'y Noise Filter, and H.V.Capacitor


Clip
Air Cover
* Pull out the lamp holder by pushing the hooks outward.
Lamp Holder
Screw
* Press the end of the Clip and pull it down and remove a screw to disassemble the air cover.
Screws
③
Screw①
* Remove screws, lift the bottom of the control box and pull it out.
②
Ass'y Noise Filter
PCB supporters
Screws①
* Remove screws to disassemble the latch body.
Screws
Screws
* Remove three screws to disassemble the HVT.
BKT HVC
Screw②
* Remove screws① to disassemble the Motor Blower and screws② securing the HVC Bracket to disassemble HVC.

P0129

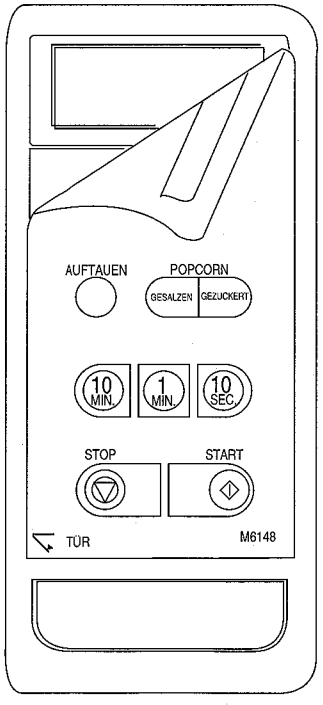
Disassembly & Parts Replacement Procedure

3. Replacement of Magnetron and Motor Assembly.
Discharge the high voltage capacitor first.(Refer to page 20)
Remove the magnetron with the shield case, permanent magnet, choke coils and 500pF capacitors, all of which are contained in one assembly.
(A) Disconnect all lead wires from the magnetron.
(B) Remove a screw and a clip securing the air cover.
(C) Remove screws securing the thermal cutout switch.
(D) Remove screws securing the magnetron to the wave guide.
(E) Take out the magnetron very carefully.
(F) Disconnect all the lead wires from the noise filter.
(G) Remove screws securing the motor Ass'y.

4. Replacement of Fuse
(A) Remove 8A fuse with a screwdriver.
(B) Replace with new one.
NOTE :
- When replacing 8A fuse, be sure to use an exact repair part.
- If new fuse opens immediately, check the primary interlock switch and interlock monitor switch.

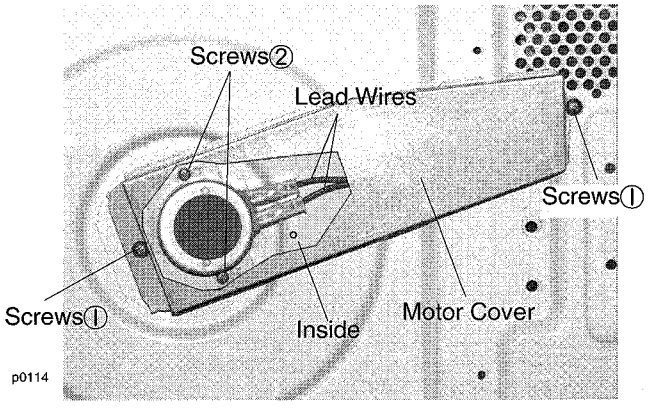
5. Replacement of Thermal Cutout Switch Ass'y on the Cavity
(A) Remove all lead wires from the noise filter and wire harness.
(B) Remove a screw securing the T.C.O. Ass'y.

6. Replacement of Membrane Panel (M6148)
(A) Disassemble the Control Box Ass'y from the oven.
(B) Take out the adhesive membrane panel.



D0357

7. Replacement of Drive Motor
(A) Take out the glass tray, guide roller and coupler from cavity.
(B) Turn the oven upside down to replace the drive motor.
(C) Remove screws (①) from the cover drive motor, then disconnect the lead wire from the drive motor.
(D) Remove screws (②) securing the drive motor.
(E) Disassemble the drive motor.
(F) When replacing the drive motor, be sure to remount it in the correct position.
(G) Screw the drive motor cover to the cavity.



8. Replacement of Interlock Switches
(A) Disconnect all lead wires from the interlock switches.
(B) Remove screws securing the body latch switch.
(C) Remove the interlock switches by pushing up the clamps.
(D) Make necessary adjustments and microwave emission check according to "MEASUREMENTS AND ADJUSTMENT" in page 6 after they are repaired or replaced with new ones.

* **Interlock Switches Replacement -** When replacing defective switches, be sure to check that the mounting clamps are not bent, broken or deficient in securing the switches properly.

CAUTION
MICROWAVE RADIATION
DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

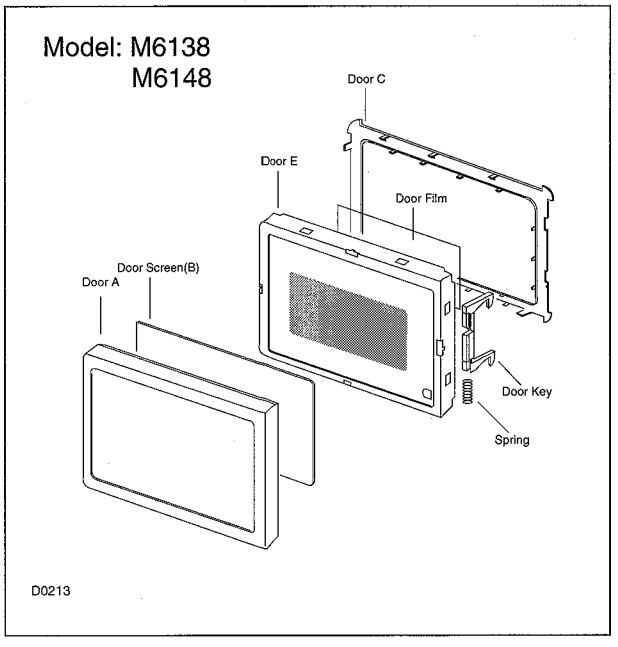
Disassembly & Parts Replacement Procedure

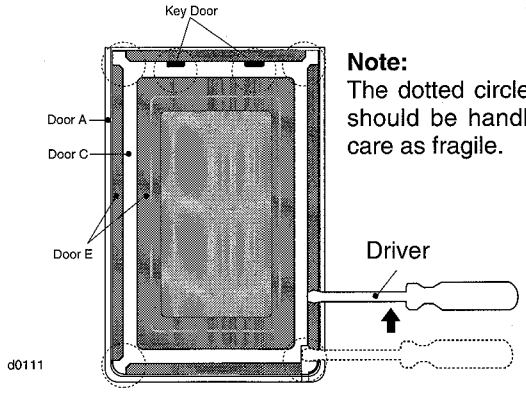
NOTE: It is recommended not to disassemble the Door Ass'y unless there is definite and specific purpose unavoidable. When you disassemble the Door Ass'y, be careful not to break the protruded stubs securing the Door A and Door C which are very fragile. When replacing defective part, confirm that those stubs are not damaged.

9. Replacement of Door Assembly

Remove screws securing the upper hinge and lower hinge to disassemble the Ass'y door.

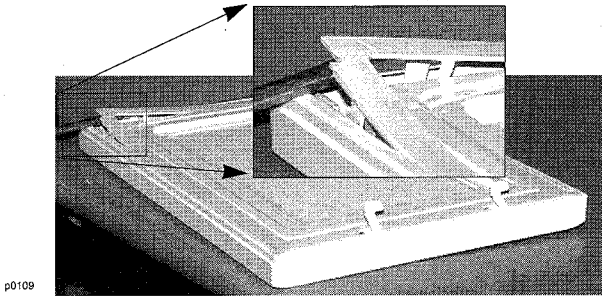
9-1. Replacement of 'Door C'



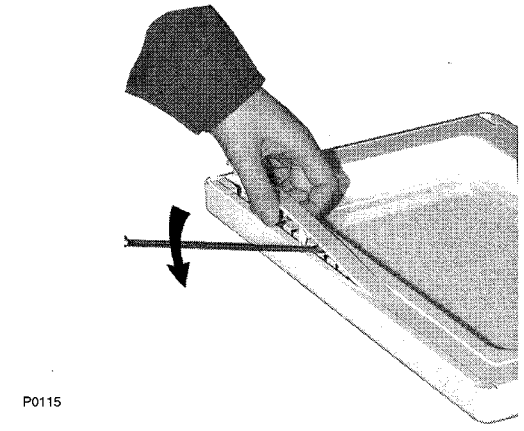


Note:
The dotted circled spots should be handled with care as fragile.

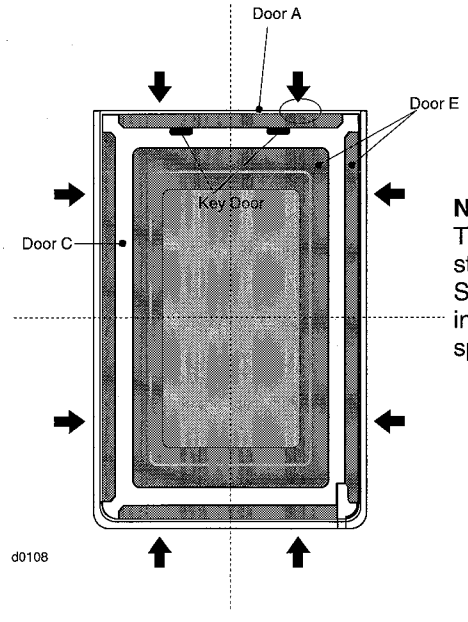
(A) The first portion to be detached is the left upper corner that has been adjoined to the upper hinge.



(B) Insert the screw driver into the gap between Door E and Door C and take apart Door C by pushing it outward as shown in figure below. Repeat the same step at other positions around Door C until you detach it completely.



9-2. Replacement of 'Door A'

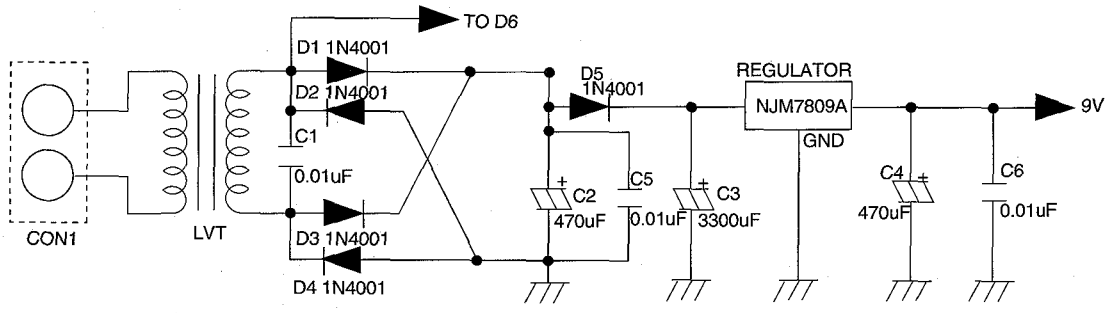


Note:
The arrows indicate stub location. Spacers should be inserted to these spots.

Touch Control Circuit Descriptions

1. POWER SUPPLY CIRCUITS

The tolerance is ±5% for VCC (+5V DC) and 10% for VSS (+12V DC),
The functions of these circuits are
A. To convert AC voltage to DC potentials.
B. To regulate the DC potentials suitable for other circuits.



D0177

Figure 1. Power Supply Circuit

NOTE 1. Normal voltages are shown in Figure 1.
2. Each symbol is shown same as printed on P.C.B.
3. D1-D5: Diode 1N4001

Touch Control Circuit Descriptions

2. POWER INITIALIZING CIRCUIT(RESET)

Initializes the microcomputer. (M32302)
Fig. 2 shows the schematic configuration.
Fig. 3 shows the voltage waveforms upon applying power.

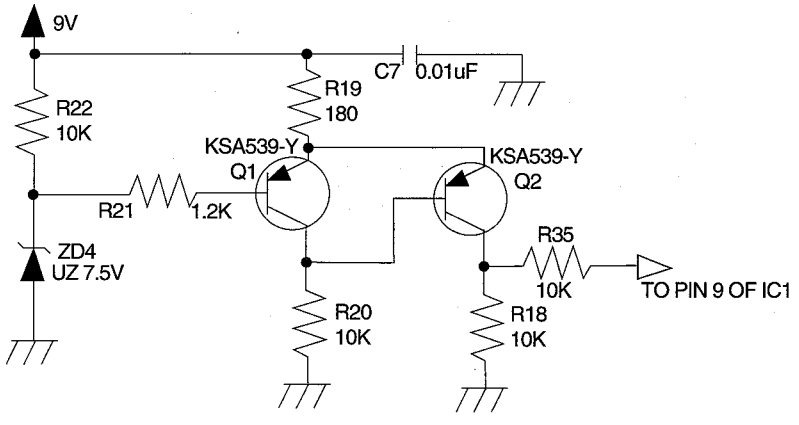


Figure 2. Power Initializing Circuit (Power up Reset Delay Circuit)

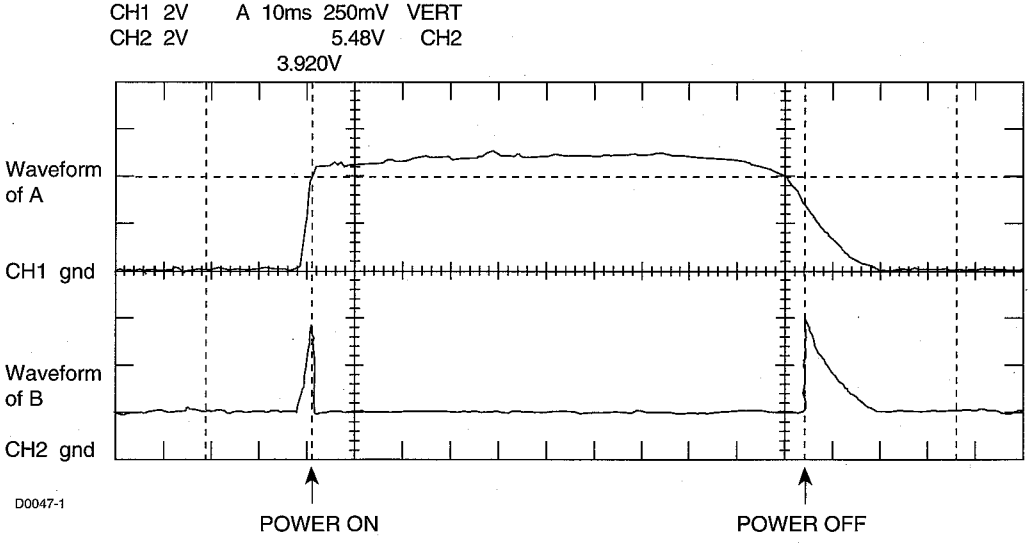
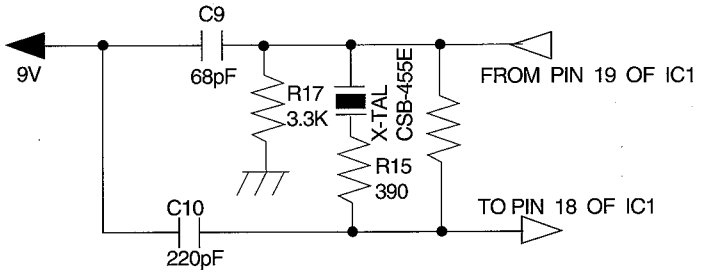


Figure 3. Voltage Waveform upon Applying Power

Touch Control Circuit Descriptions

3. TIMER PULSE SHAPING CIRCUIT

Converts sinuous waveform of 50Hz to shaped waveform.
This pulse becomes the time base in the microcomputer M32307 (IC1) and supplies zero-crossing point signal power control relay triggering.
Figure 4 shows the schematic configuration.
Figure 5 shows the waveforms of each section in Figure 4.



D0179

Figure 4. Pulse Shaping Circuit

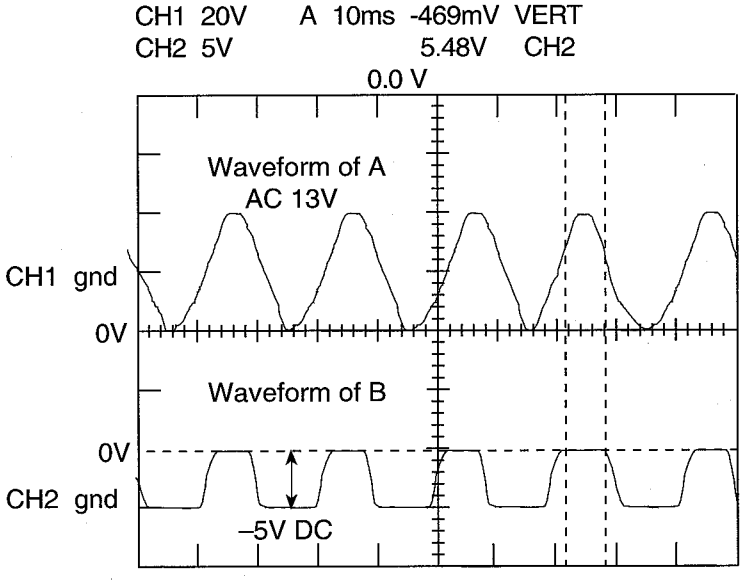


Figure 5. Waveform of Each Section in Figure above.

Touch Control Circuit Descriptions

4. POWER CONTROL RELAY & MAIN RELAY DRIVING CIRCUIT

Drives power relay according to the signals from the microcomputer.
Figure 6 shows the schematic configuration of driving circuit.
Figure 7 shows the waveform of the each section in Figure 6.

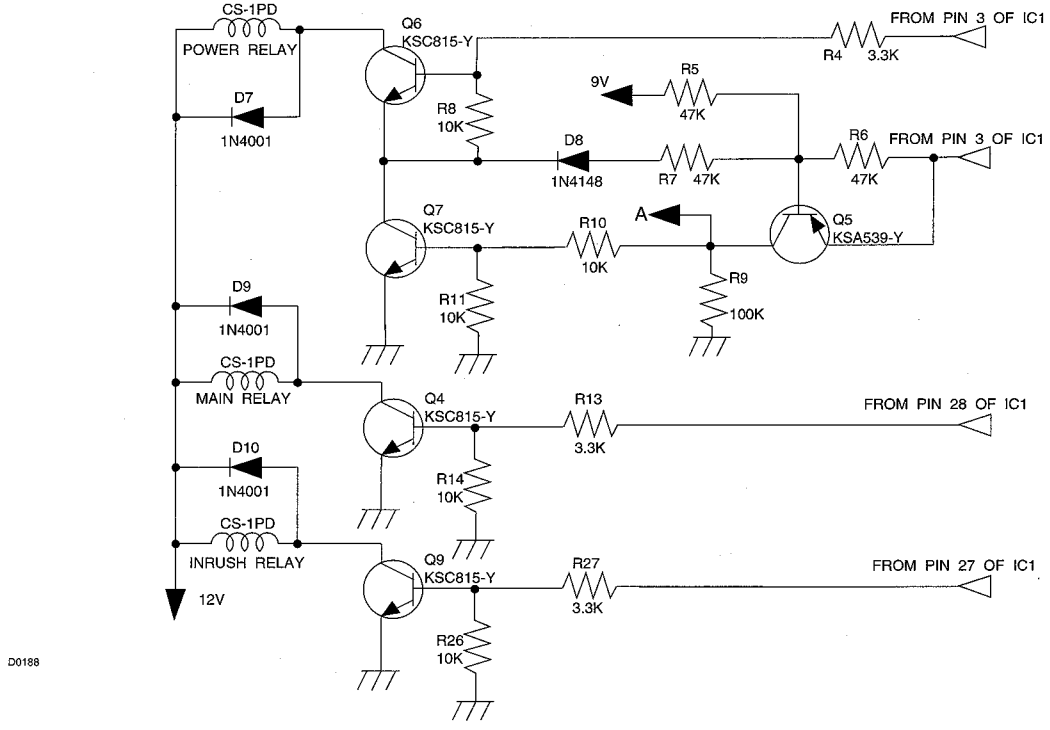


Figure 6. Power Control and Main Relay Driving Circuit

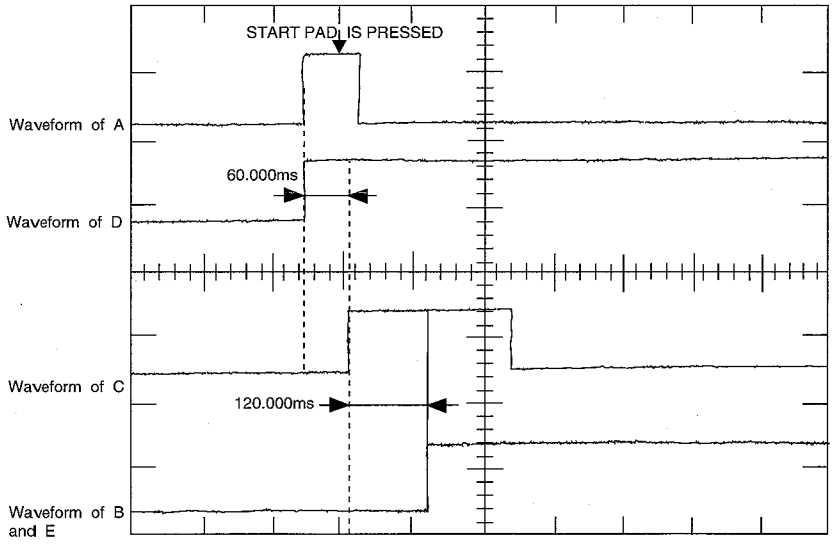


Figure 7. Waveform of Figure 6 Circuit

Touch Control Circuit Descriptions

5. FUNCTION SELECTOR PAD MATRIX(Keyboard and PCB Assembly)

This circuit has 14 keys. Basic wiring is shown in Fig. 8.
The relevance between terminals and keys is shown in Figure 8 and Figure 9.

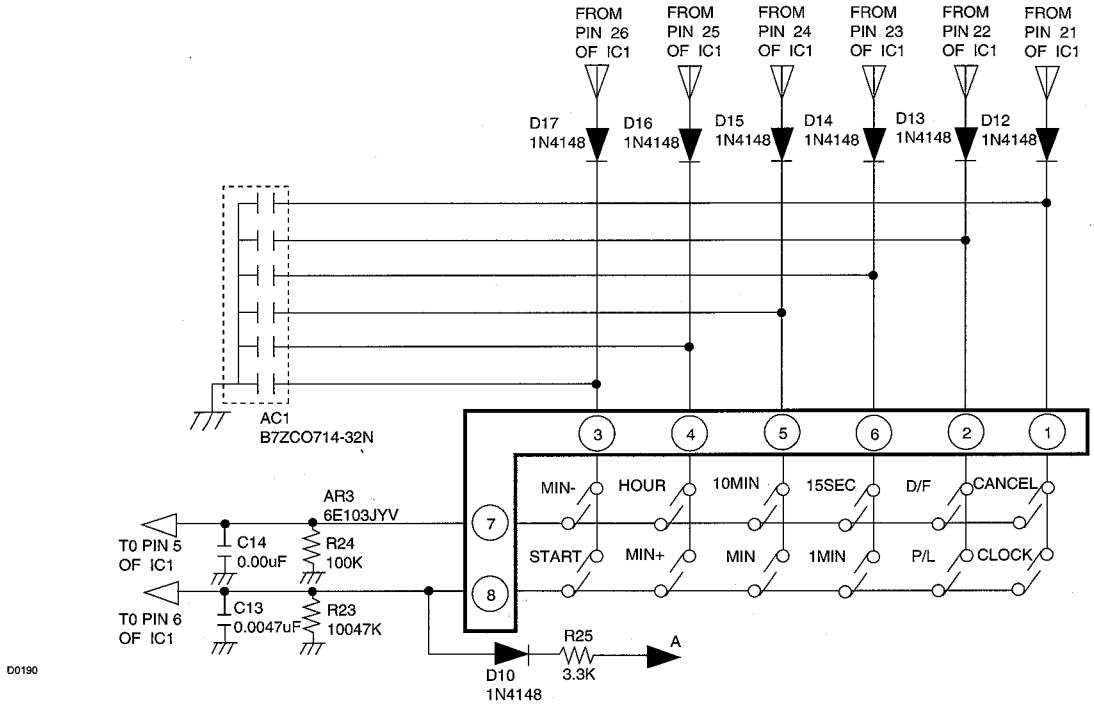


Figure 8. Function Selector Pad Key Matrix

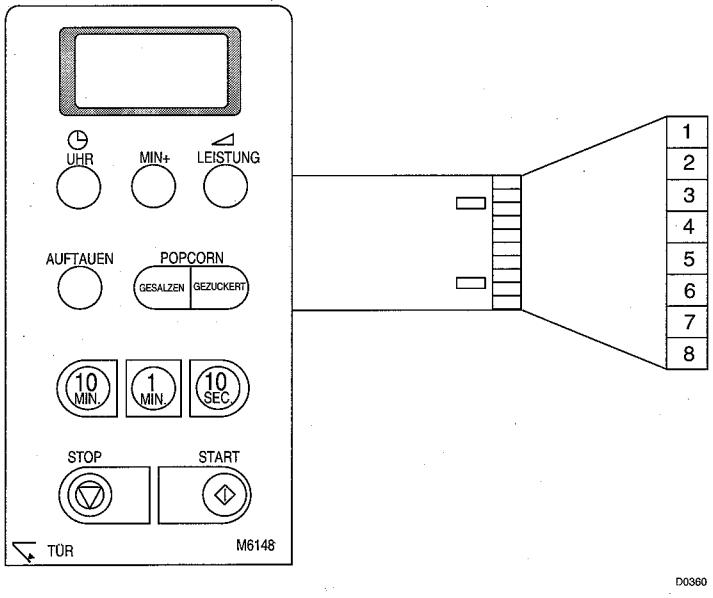


Figure 9. Key Matrix Termination Order

Touch Control Circuit Descriptions

6. DISPLAY CIRCUIT

Figure 10 shows the schematic configuration of display circuit.
Figure 11 shows the pin assignment of LTC4704-GKC display.
Figure 12 shows the pattern connection of LTC4704-GKC display.

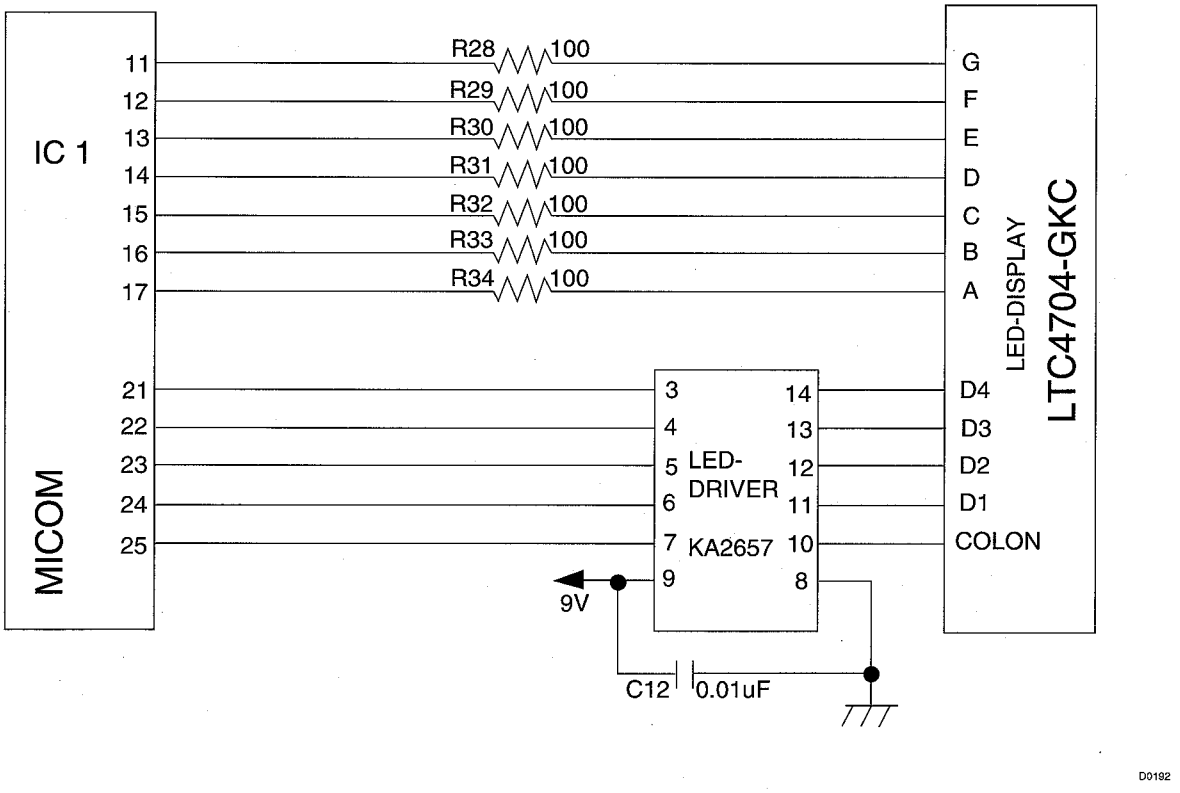
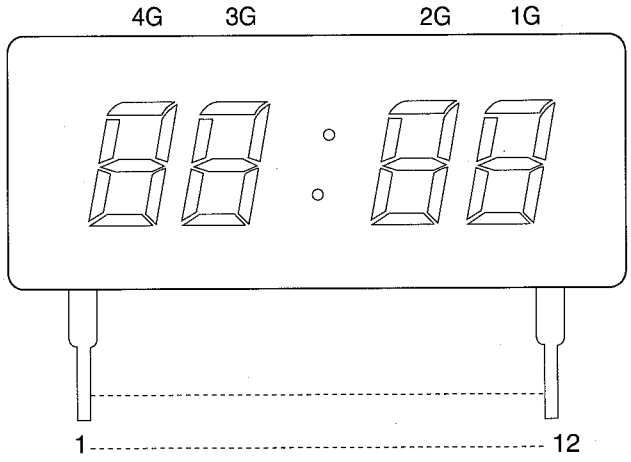


Figure 10. Schematic Configuration of the Display

Touch Control Circuit Descriptions



D0193

PIN NO	1	2	3	4	5	6	7	8	9	10	11	12
CONN-ECTION	C	D1	D2	D3	D4	g	f	e	d	c	b	a

D0200

Figure 11. Pin Assignment of 6ME-06

PATTERN CONNECTION

	COLON	4G	3G	2G	1G
a	—	a	a	a	a
b	—	b	b	b	b
c	—	c	c	c	c
d	—	d	d	d	d
e	—	e	e	e	e
f	—	f	f	f	f
g	—	g	g	g	g
h	—	h	h	h	h

D0194

Figure 12. 6ME-06 Pattern Connection

Touch Control Circuit Descriptions

7. PULSE OSCILLATOR CIRCUIT

This circuit generates an oscillating frequency that controls the stepping of various input and output signals, and measures the time of data processing speed.

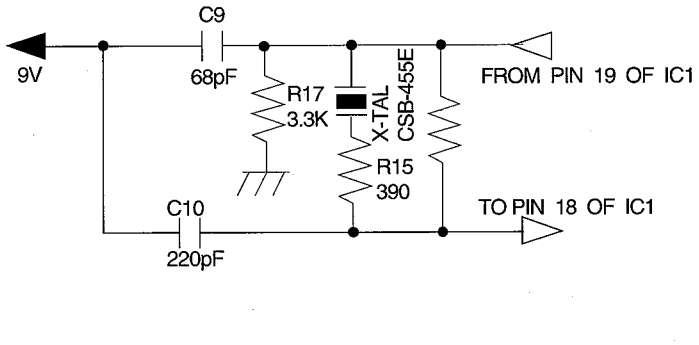
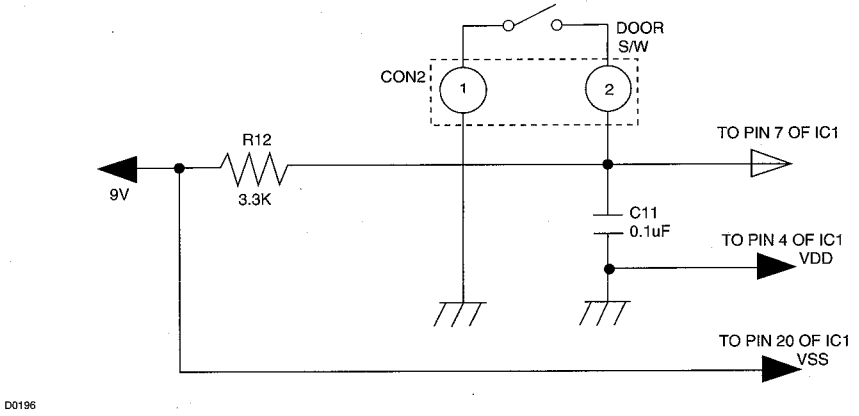


Figure 13. Pulse Oscillator Circuit

8. DOOR SENSING SWITCH CIRCUIT (Status Detecting)

Detects the following (A) and sends the signal to the microcomputer.
(A) Whether the door is open or closed.
(B) Figure 14 shows the schematic configuration of the status detecting circuit.



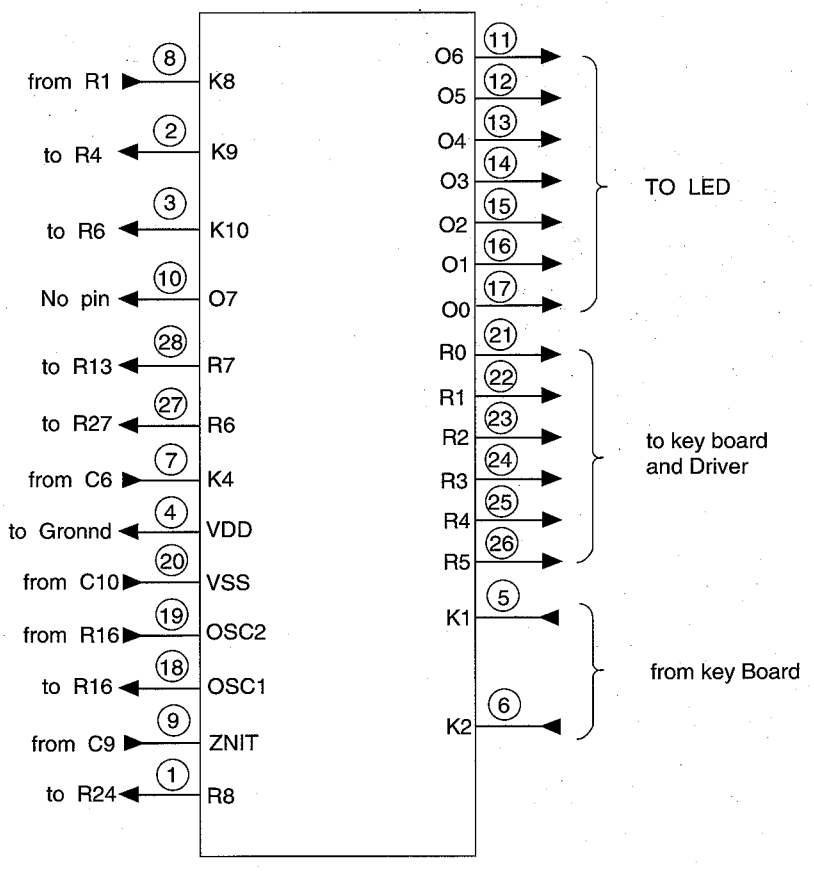
Symbol ON	Status	ON	OFF
Door S/W	Door S/W	Door Open	Door Closed

Figure 14. Status Detecting Circuit

Touch Control Circuit Descriptions

9. MICROCOMPUTER (M32307) CIRCUIT

The functions of this IC are
(A) To receive the information from other circuits.
(B) To store the information.
(C) To process the information according to the predetermined sequence.
(D) To send signals to the other circuits.



D0289

Figure 15. Microcomputer (IC)

Touch Control Circuit Descriptions

10. BUZZER CIRCUIT

The Buzzer beeps when cooking cycle is completed or when the pad input is recognized by the microcomputer.
Figure16 is the schematic configuration of buzzer circuit.
And Figure 17 is waveforms of each buzzer tone.

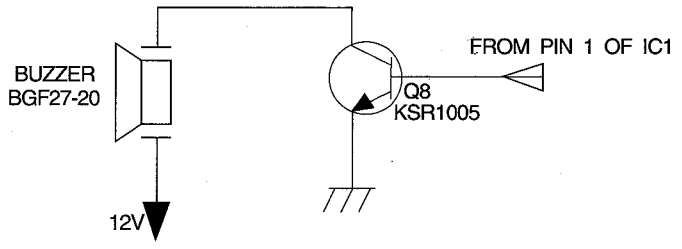


Figure 16. Driving Circuit of Buzzer and Waveform

NOTE: Buzzer Tone Classification

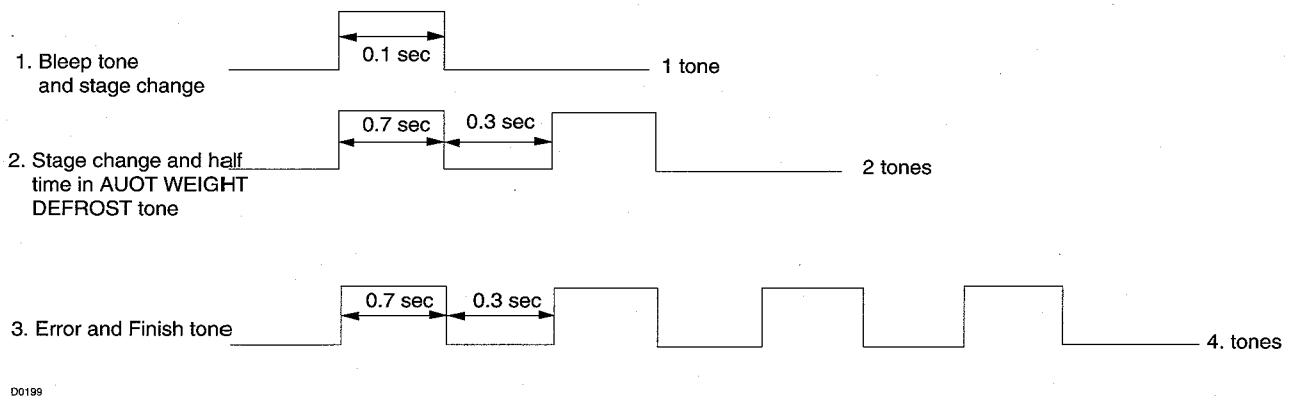
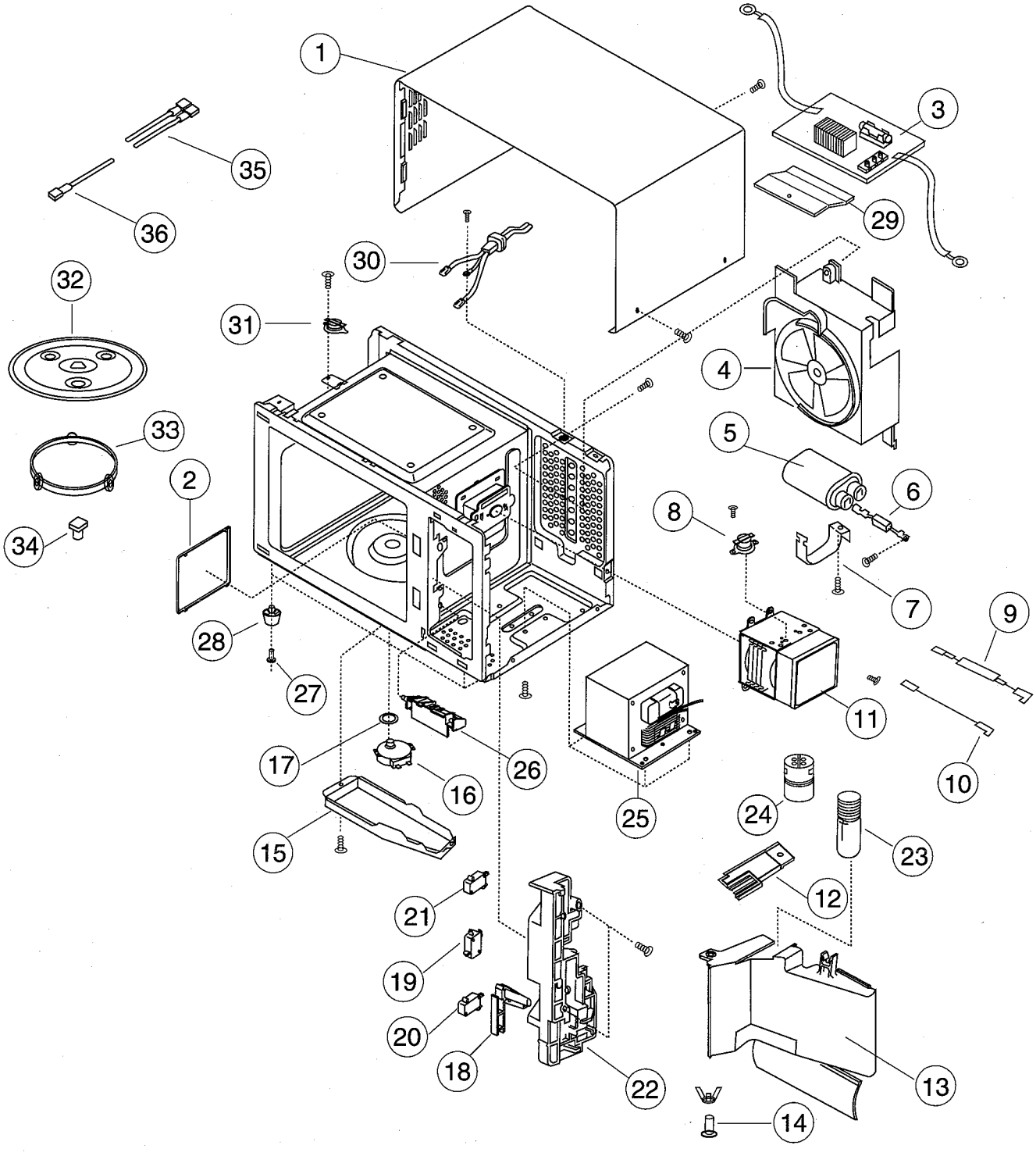


Figure 17. Waveform of Each Buzzer Tone

Exploded View - Cavity Parts (M6138, M6148 SEG)



Exploded(6138)

Parts List – Main Parts

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
1	76402-286-141	OUTER PANEL;SECC T0.6X312.8X959.4/SP-BR-01-B	1	BRN
1	**76402-286-143**	**PANEL-OUTER;T0.6 W312.8 L959.4 SC-WH-07-G**	**1**	**WHT**
2	77623-214-620	COVER MGT;PP-A353 GE WHT 30G	1	
3	79179-0035-00	ASSY NOISE FILTER;250V50/60HZ 8A DN-0819-15	1	M6148
3	**79179-0029-00**	**ASSY NOISE FILTER;250V50/60HZ 8A DN-0819-20**	**1**	**M6138**
4	76821-0004-03	MOTOR-FAN;SER-206 230V0.3A	1	
5	71569-902-060	H.V.CAPACITOR;2100WVAC 0.91UF (SCH-212914B2)	1	
6	72169-219-108	H.V.DIODE;HVR-1X-32B-12	1	
7	76614-284-120	BKT HVC;SECC T0.8	1	
8	73589-001-039	SWITCH-THERMO;PW-2N(BKT;23.8MM,ON60'C,OFF160'C)	1	
9	79163-0142-00	ASSY-H.V.FUSE;RE-350T THV060T-0700-H	1	
10	73053-207-230	WIRE LEAD B;2JA0 140MM	1	
11	72039-001-163	MAGNETRON;OM75SD(31)ESST	1	
12	73314-0003-00	COVER-LAMP;PP-A353 BLK 10G RE-350	1	
13	73311-0005-00	COVER-AIR;NYLON#66-2411GF BLK 87.8G	1	
14	76634-210-210	CLIP B;POLYOLEFIN 0.2GR GE-WHT	1	
15	76052-218-010	COVER DRIVE MOTOR;SECC T0.4	1	
16	74763-200-130	MOTOR-SYNCHRONOUS;M2LB24ZR52 (DRIVE-MOTOR)	1	
17	76464-223-510	BARBECUE GASKET;BRASS WIRE	1	
18	76463-218-710	SLIDER LATCH;PBT-VALOX 310 94VC NTR 11G	1	
19	73579-203-278	MICRO SWITCH;VP-531A-OF(T85)	1	
20	73579-203-207	MICRO S/W;VP533A-OF P,S(T85)	1	
21	73579-203-208	MICRO S/W;VP532A-OF D,M(T85)	1	M6148
21	**73579-203-207**	**MICRO S/W;VP533A-OF P,S(T85)**	**1**	**M6138**
22	76462-214-010	BODY LATCH;POM F20-02	1	
23	A4158-0008	LAMP;2300250404N 230V 25W ORG E14	1	
24	76609-200-228	LAMP SOCKET;E/14(22.225)	1	
25	77202-0041-00	TRANS-H.V;Y52STC M6137G 230V 50HZ AC2210/3.45V	1	
26	77623-214-210	LEVER DOOR;RESIN P.A F20-02 HB NTR	1	
27	77364-241-310	PIN FOOT;P.P(JI350,BLK)	4	
28	76073-200-810	FOOT;P.P JI350 BLK	1	
29	73353-0003-00	GUIDE-AIR;PP-A353 20G NTR	1	
30	79243-0057-00	ASSY POWER CORD;H05VV-F 3G 0.75MM 250V8A L1220	1	
31	73589-001-061	SWITCH-THERMO;PW-2N(100.0 UNDER,BKT 30MM)	1	
32	76112-207-510	TRAY COOKING;RE-57X	1	
33	79299-208-359	ASSY-GUIDE ROLLER;MW5500T	1	
34	71444-0012-00	COUPLER;TEFLON 8G WHT RE-350TB	1	
35	79202-0282-00	ASSY WIRE HARNESS-A;230V M6148(SSI)/(SSW) S.E.G	1	M6148
35	**79202-0279-00**	**ASSY WIRE HARNESS-A;230V M6138(SSI/SSW) S.E.G**	**1**	**M6138**
36	79204-0226-00	ASSY WIRE HARNESS-R;230V V2M6 ALL MODEL	1	

NOTE ; WHT=WHITE VERSION
BRN=BROWN VERSION

Standard Parts List

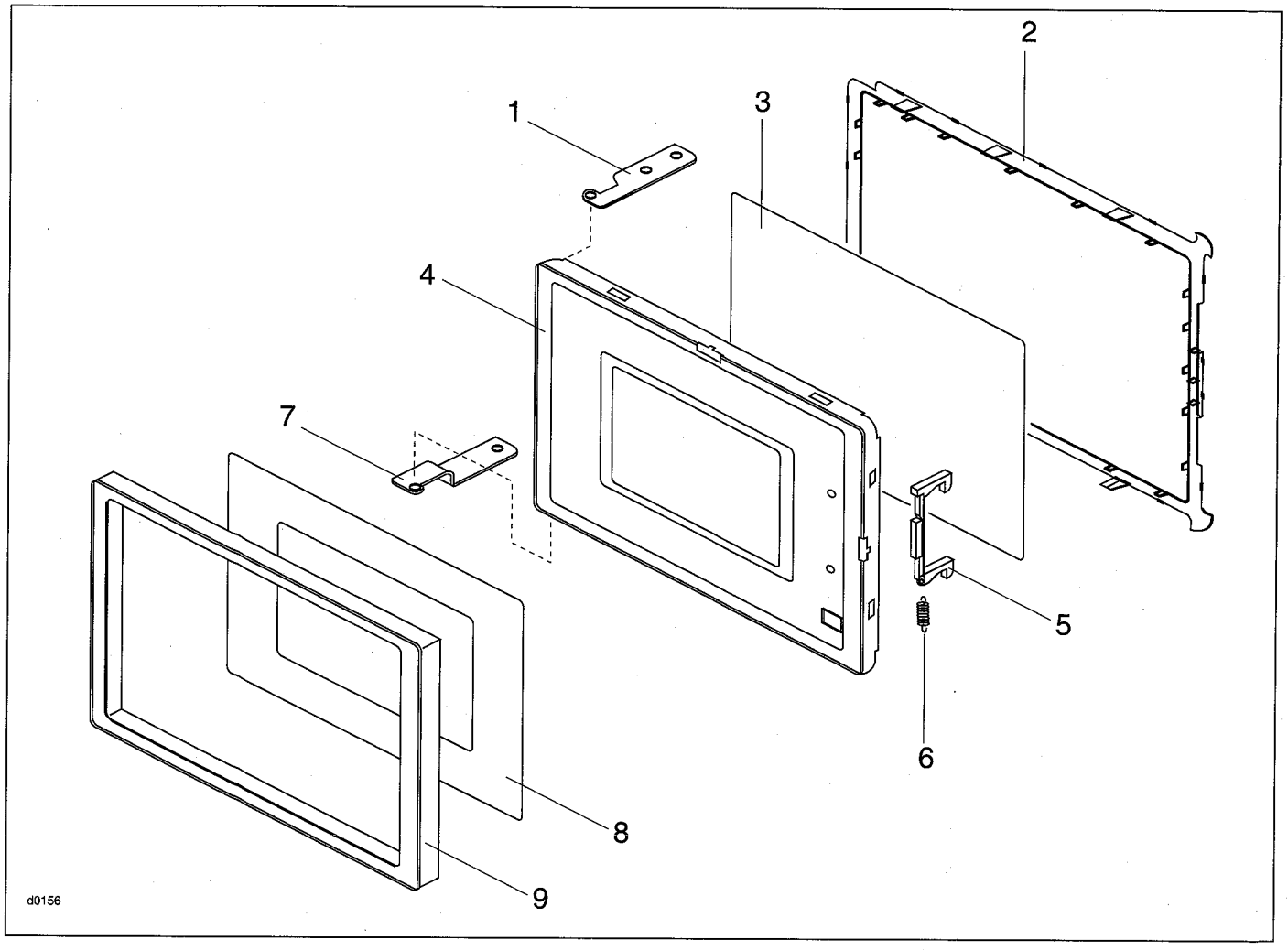
M6138

Parts No.	Description / Specification	Q'ty	Remarks
77108-530-061	SCREW-TAP,PH;2S-3X6 FE,FZY	2	TCO-MG
77128-240-085	SCREW-TAP TH;TAP TH 2-4X8 FE FN	4	PN/OUT
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	CV/MGT
77154-203-820	SCREW"A";2S-4X12 FE FZY	2	PN/OUT
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	PCB
77154-203-820	SCREW"A";2S-4X12 FE FZY	2	BODY-L
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	DIODE
77074-200-010	ASSY BOLT HEX;MSWR3 M5X12 ZPC2 WT	4	HINGE
77108-540-081	SCREW-TAP,PH;+2S-4X8 FE FZY	2	D/MOT
77108-540-101	SCREW-TAP PH;5-4X10 FE FZY	1	HVC
77128-540-081	SCREW-TAP;2-SLOT 4X8 FE.FZY	2	CO-GE
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	CAP-FR
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	B/HI-U
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	COV/LA
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	B/THER
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	2	OUT-PN
77154-202-910	WASHER SCREW;2S-5X12	4	HVT
77154-202-910	WASHER SCREW;2S-5X12	4	MGT
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	B/HVC
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	CON-PN

M6148

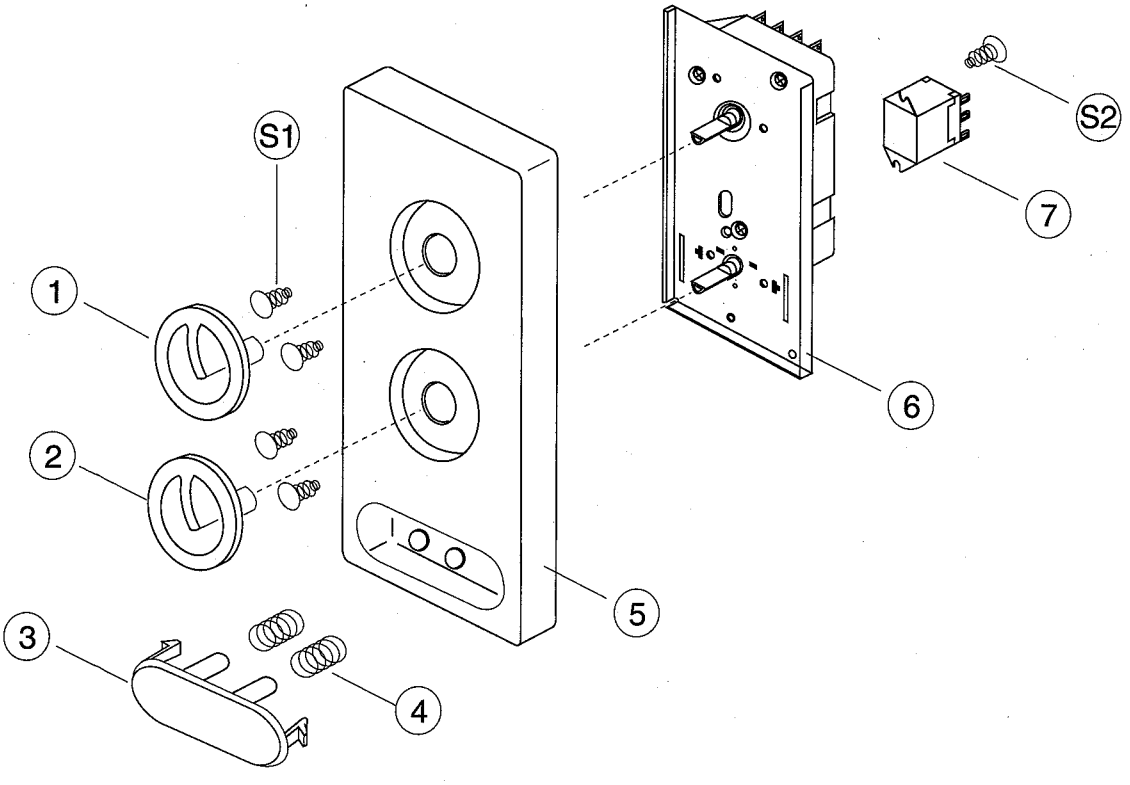
Parts No.	Description / Specification	Q'ty	Remarks
77108-530-061	SCREW-TAP,PH;2S-3X6 FE,FZY	2	TCO-MG
77128-240-085	SCREW-TAP TH;TAP TH 2-4X8 FE FN	4	PN/OUT
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	DIODE
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	PN-BAC
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	B/MGT
77154-203-820	SCREW"A";2S-4X12 FE FZY	2	PN/OUT
77154-203-840	SCREW-ASSY TAP;TH 2S-4X8 MSWR3 ZPC YEL WS	1	M-TAIL
77074-200-010	ASSY BOLT HEX;MSWR3 M5X12 ZPC2 WT	4	HINGE
77108-540-081	SCREW-TAP,PH;+2S-4X8 FE FZY	2	D/MOT
77108-540-081	SCREW-TAP,PH;+2S-4X8 FE FZY	1	HVC
77108-540-081	SCREW-TAP,PH;+2S-4X8 FE FZY	1	CO-CE
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	B/HI-U
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	CAP-FR
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	CVR/LA
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	1	B/THER
77128-540-101	SCREW TAP TH;2S-4*10 FR FZY	2	OUT-PN
77154-202-910	WASHER SCREW;2S-5X12	4	HVT
77154-202-910	WASHER SCREW;2S-5X12	4	MGT
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	B/HVC
77154-203-820	SCREW"A";2S-4X12 FE FZY	1	CVR/MT
77154-203-820	SCREW"A";2S-4X12 FE FZY	2	CON-PA

Exploded View & Parts - Door Parts (M6138/M6148)



Ref. No	Parts No.	Description / Specification	Q'ty	Remarks
1	76664-235-510	HINGE UPPER;SBC1 T2.0 BLK	1	BRN
1	**76664-235-520**	**HINGE UPPER;SBC T2.0(GE WHT)**	**1**	**WHT**
2	76021-204-310	DOOR C;PP-A353 BLK 50G	1	BRN
2	**76021-204-360**	**DOOR C;PP-A353 51G**	**1**	**WHT**
3	76144-205-910	FILM DOOR;MW3500T(N.P) T0.1X253X131	1	
4	79342-0003-03	ASSY DOOR-E;M6138 COATING BLK	1	BRN
4	**79342-0003-02**	**ASSY DOOR-E;M6138 COATING WHT**	**1**	**WHT**
5	76423-231-110	KEY DOOR;POM-KEP BLK 10G	1	BRN
5	**76423-231-120**	**KEY DOOR;POM-KEP GE WHT 10G**	**1**	**WHT**
6	76674-238-720	SPRING KEY DOOR;HSWR V1M2,V2M6	1	
7	76664-235-610	HINGE LOWER;SBC T3.0 BLK	1	BRN
7	**76664-235-620**	**HINGE LOWER;SBC T3.0 (GE WHT)**	**1**	**WHT**
8	74113-0014-02	SCREEN-DOOR(B);ACRYL T2.0 W358 L205 M6138(SSI)	1	BRN
8	**74113-0014-00**	**SCREEN-DOOR(B);ACRYL T2.0XW358.5XL205 M6138**	**1**	**WHT**
9	74041-0026-01	DOOR-A;ABS(HR-0370D) RA-BR-03-C M6138(SSI) B2014	1	BRN
9	**74041-0026-00**	**DOOR-A;ABS(HANNAM H2938) AEG WHT M6138**	**1**	**WHT**

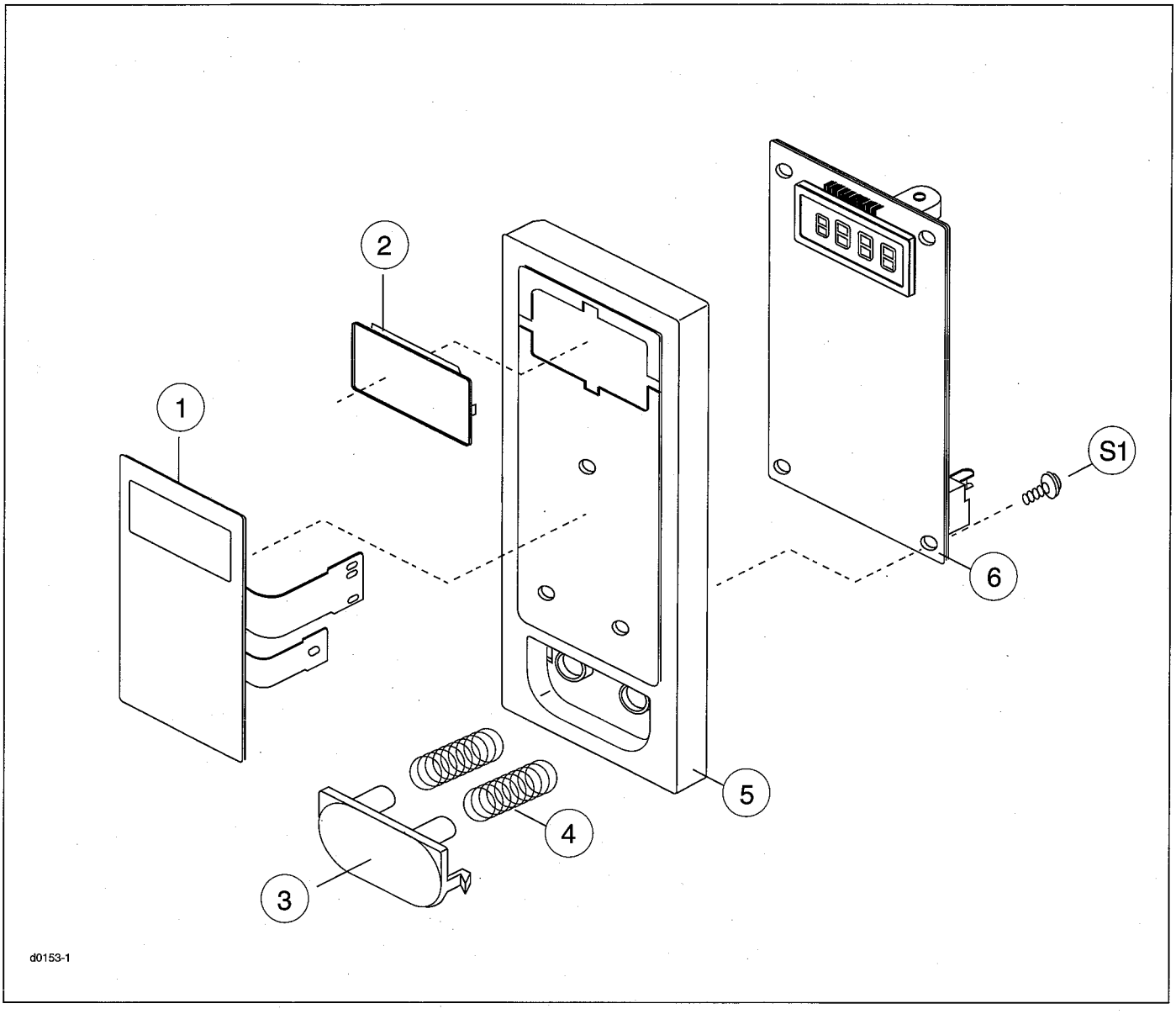
Exploded View & Parts - Control Parts (M6138)



154-8

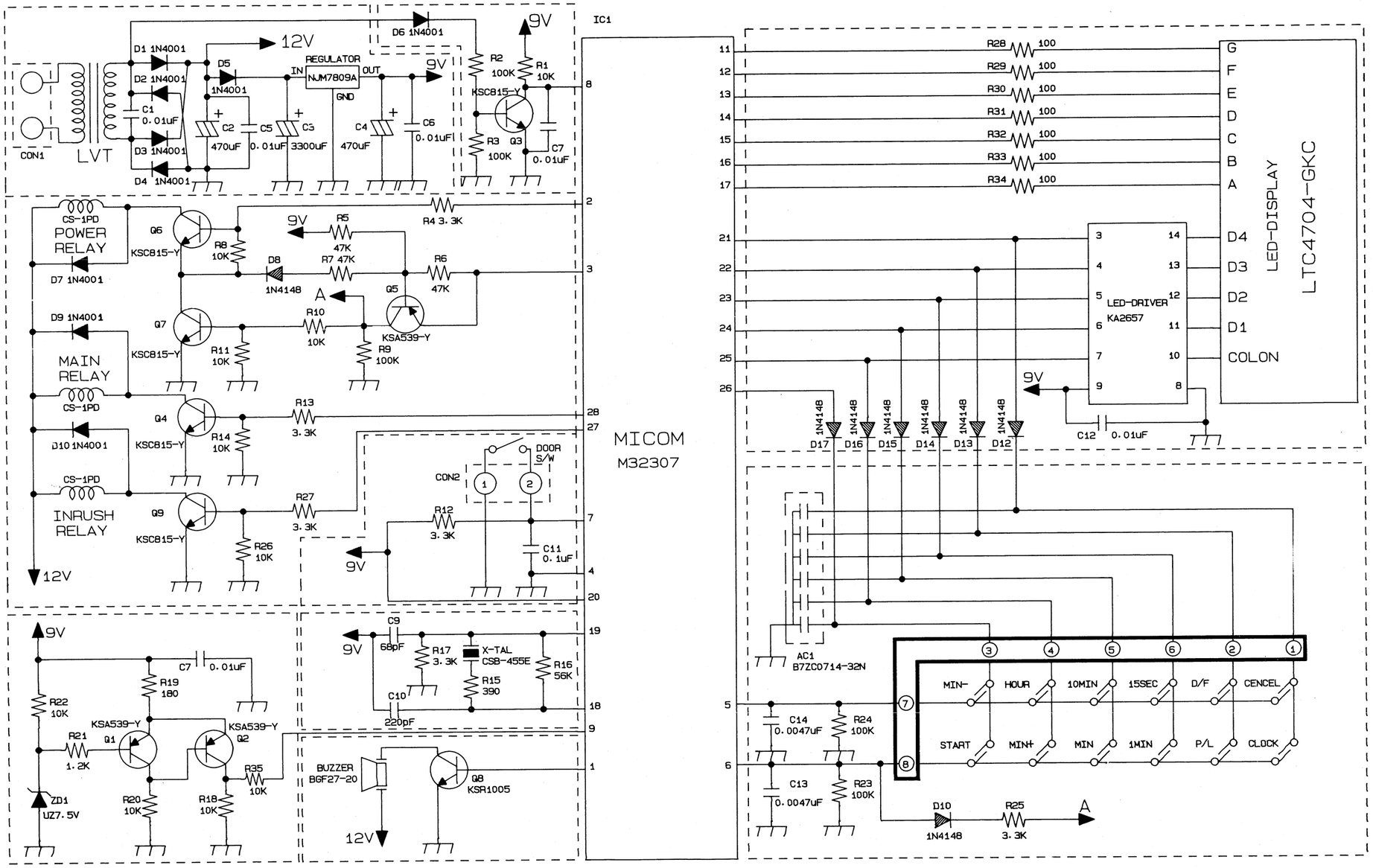
Ref. No	Parts No.	Description / Specification	Q'ty	Remarks
1	**74083-0034-18**	**KNOB-TIMER;ABS(W9403D) RA-WH-07-G 20G M6138(SAW)**	**1**	**WHT**
1	74083-0034-21	KNOB-TIMER;ABS(HR-0370D) RA-BR-03-C 20G M6138(SSI)	1	BRN
2	**74083-0034-08**	**KNOB-POWER;ABS WHT 7G MX235(EUW)**	**1**	**WHT**
2	74083-0034-22	KNOB;ABS(HR-0370D) RA-BR-03-C 20G M6138(SSI)	1	BRN
3	**74083-0031-01**	**BUTTON-DOOR;ABS(92406R) WHT 30G MX235**	**1**	**WHT**
3	74083-0031-05	BUTTON-DOOR(D);ABS(HR-0370D) RA-BR-03-C M6138(SSI)	1	BRN
4	76674-241-010	SPRING LEVER;HSWR3 PI0.4 1.4REDESIGN	2	
5	**74051-0024-06**	**CONTROL-PANEL;ABS(HR-0370D) RA-WH-07-G M6138(SSW)**	**1**	**WHT**
5	74051-0024-04	CONTROL-PANEL;ABS(HR0370D(RA-BR-03-C M6138(SSI)	1	BRN
6	76222-0012-00	TIMER;TMFF30MTC1 220/240V15A50HZ	1	
7	A3068-0052	RELAY;CHP11-A240S 250V15A	1	

Exploded View & Parts - Control Parts (M6148)



Ref. No	Parts No.	Description / Specification	Q'ty	Remarks
1	76013-0055-03	MEMBRANE-PANEL;P.E.T W91.7 L168.7 M6148(SSI) SEG	1	BRN
1	**76013-0055-02**	**MEMBRANE-PANEL;P.E.T W91.7 L168.7 M6148(SSW) SEG**	**1**	**WHT**
2	77654-205-560	WINDOW DISPLAY;ACRYL-IH830 6.5G	1	
3	74083-0052-01	BUTTON-DOOR;ABS(HR0370D) RA-BR-03-C 12G M6148(SSI)	1	BRN
3	**74083-0052-00**	**BUTTON-DOOR;ABS(W9403D) RA-WH-07-G 12G M6148**	**1**	**WHT**
4	76674-241-010	SPRING LEVER;HSWR3 PI0.4 1.4REDESIGN	2	
5	74051-0023-01	CONTROL-PANEL;ABS(HR-0370D) RA-BR-03-C M6148(SSI)	1	BRN
5	**74051-0023-00**	**CONTROL-PANEL;ABS W9403D RA-WH-07-G 146G M6148**	**1**	**WHT**
6	79129-0076-03	ASSY P.C.B;230V50HZ M6148(SSI)	1	

P.C.B Circuit Diagram



NOTE

1. DOOR IS OPENED.